The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. XIII. No. 331 OCTOBER 17, 1925 Prepaid Annual Subscription: United Kingdom, £1.1.0; Abroad, £1.6.0.

Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE *is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders and Postal Orders should be made payable to Benn Brothers, Ltd.*

Editorial and General Offices—8, *Bouverie St., London, E.C.4.*

Telegrams: "Allangas, Fleet, London." Telephone: City 9852 (6 lines).

The New German Combine

IT would be surprising if the great amalgamation just announced of German dyestuff interests did not excite some concern in the corresponding industries in this and other countries. In some cases, we imagine, the concern must be serious, for Germany, already a powerful rival in all chemical enterprise, obviously now contemplates an advance on her present high standard of efficiency. Team work has always been well understood and practised in Germany, in no domain more successfully than in chemical research and production, but the present move points to rather more than the usual co-operation between separate firms for the protection of their common interests where they are exposed to external non-German competition. It suggests an organic union for the future of firms which, though prepared to act together for certain purposes, were, nevertheless, in the past separate and to some extent rival concerns. If the purpose is so to improve production methods as to lower selling prices all round, then the effects are bound to be felt by competitive industries in other countries, and especially in Great Britain. Whatever the economic significance of this amalgamation, it certainly indicates that Germany is fully alive to every means of regaining her former position in the world's trade. The move is a serious one in its bearing on our trade position, if only from the point of view of our ability to produce essential chemical products ourselves, and in the quantities and qualities required.

We have heard much of late about the enormous advance that chemical research and chemical production have made in this country during the last decade. It is all good and creditable to British enterprise. The weakness of it is that it represents mainly an approach to a point that Germany had reached long before, in such matters, for example, as nitrogen fixation and dyestuff production. If Germany had stood still or nearly still while Great Britain was steadily overtaking her, the position might be quite satisfactory from the British point of view, but it is becoming clear that Germany has been hard at work in new fields while we have been hard at work on the old arrears. The distinction is important in judging of our present position, and the new step taken by the great German chemical organisations may well serve as a warning against the risk of excessive self-complacence.

Danger of Static Electricity

ABOUT a year ago we drew attention to the risks attendant upon the handling of certain volatile liquids through the generation, usually quite unsuspected, of static electricity. In the particular case of such a liquid being transferred to, say, a tank-wagon there is always the liability that the piping system, the liquid itself, and the receptacle may become highly charged electrostatically, and the likelihood is increased when non-conducting liquids, such as benzol, alcohol, acetone, etc., are being handled. When dealing with the matter previously we enumerated those precautions which cannot afford to be neglected if the danger from explosion is to be eliminated, and that our warning was not without justification is emphasised by a report just issued by the Inspector of Factories in connection with the explosion of a petrol road tank which occurred at the Shell Mex works at Shell Haven in Essex.

The official explanation of the accident ascribes the ignition and subsequent explosion of the spirit vapour in the tank to an electric spark arising from the discharge, to the earthed metal of the filling pipe, of a charge of static electricity (accumulated in the insulated metal body of the car) produced by the flow of the spirit into the tank. The report goes on to point out that when anhydrous liquids flow through a pipe or nozzle they become charged with one form of electricity, while the opposite kind is developed in the discharging pipe. There is, too, ample evidence that a spark produced by a charge of the kind is quite sufficient to cause ignition of a mixture of air with an

inflammable vapour such as petrol or benzene. As an example, in fact, of the ease in which the effect may occur the report draws attention to the number of such ignitions which have resulted in connection with the use of benzene in dry-cleaning processes, where the mere removal of a silk garment from the benzene atmosphere has been sufficient to produce a spark and cause ignition. Further, a report which we have just received from America, states that the Bureau of Chemistry, Washington, has actually determined that static sparks can ignite dust, and this is suggested as a possible cause of an increasing number of explosions.

As to the precautions to be observed we can do no more than repeat that when filling tank-wagons the liquid should not be permitted to drop into the tank, but the lead-in pipe should be placed below the level of the liquid, while the pipe or nozzle should be in direct contact with the tank at all times. The plant, moreover, should be earthed at one point and—most important of all, perhaps—it must be borne in mind that the electrical effect is increased if the filling pipe is made of rubber or other non-conducting material, such material tending to cause an accumulation of the charge in the pipe instead of conducting it to earth. The tank-wagon to-day is so popular and adaptable a vehicle for the transport of liquids of the kind that it is very essential that the elementary means which will give freedom from these risks should be fully understood and given wide publicity.

The French Congress

SPECIAL interest was added this year to the proceedings of the French Congress of Industrial Chemistry, of which a report by our special representative is published in this issue, by the celebrations of the centenary of Chevreul's first published investigations on the chemistry of the oils and fats. The function was presided over by the Prime Minister of France, and was attended by the President of the Republic, in the company of many distinguished scientists, including M. Guillet, the metallurgist, who was recently elected to the Academy of Sciences, Great Britain being represented by Sir William Pope, Sir Robert Hadfield, and Professor Armstrong. In addition to the French and British members at the Congress, delegates from some sixteen countries attended the ceremony, which was thus a fitting tribute of chemistry throughout the world to the memory of one of the pioneers in the field of organic research. The Congress was significant not for this reason alone, however, for it indicated the international character of science, bearing ample evidence, in the words of Sir Robert Hadfield's address, that "science knows no boundaries," and the hope was expressed that scientists would "co-operate in the future as they had done in the past in working for the welfare of humanity."

In doing honour to the memory of those to whose early work the great developments of the past century in industrial chemistry are so largely due—and this year marks also the centenary of Faraday's discovery of benzene—science witnesses to the essential unity of all nations in service to the cause of progress, and demonstrates that fundamentally all who have the true interests of science at heart are one in desiring to advance the welfare of the race. An international spirit in the affairs of nations is needed perhaps more than anything else to-day, and the message of the French Congress may well serve as an inspiration in every sphere of human activity.

Another Year of National Research

THE new report on Scientific and Industrial Research for the year 1924–25 has but one disadvantage, and to state it is to pay the best possible compliment to its compilers. The report is so full of matter and so free from padding and unnecessary verbiage that it needs to be read in order to be fully understood, and no summary could do it justice. It requires and deserves to be studied by everyone interested in the subject. For the moment it must suffice to indicate some general points, of which two are particularly interesting.

The first is the size of the research organisation, which has quietly grown up under the direction of Sir Frank Heath and his band of competent assistants. The Department was started on the most modest scale, with a small staff, and largely in an experimental spirit. The funds available at the beginning were limited, and the Department, in feeling its way, had to be careful to guard against mistakes which might have prejudiced its future and excited active opposition from those who regarded scientific research at that time as something of a fad. Progress has, therefore, had to be of a conservative type. Fortunately, however, it has been sound. The extensions have been based on direct experience, early prejudice has gradually changed into warm appreciation, co-operation between scientific and industrial interests has developed naturally and is now established, commercial firms and the public generally are coming to accept research as a national necessity, and expert investigations on a co-operative basis are now proceeding into a wide range of subjects. An important addition to the resources of the Department will be the new chemical research laboratory at Teddington, where work on chemical reactions at high temperatures and pressures is to be undertaken without delay. A really large research organisation, both directional and co-ordinative, has thus been created with little self-advertisement and comparatively little cost, but with much hard and well-directed work. The expenditure on headquarters administration during the financial year 1924-25 was £35,920 and the total expenditure of the department was £539,199, of which the considerable sum of £89,126 was derived from fees for tests and special investigations for outside bodies. During the same period 258 grants were made to research workers and students-in-training at a cost of £35,000.

The second matter of interest is the thoroughly sound theory of the relation between research and industry expounded in the report. While the embarrassments and losses that the staple industries of the country are suffering are declared to be "not primarily due to the neglect of science," it is added that lack of scientific leadership in many industries may easily hamper and delay recovery. The possibilities of a systematic application of scientific knowledge to industry are, as the report states, immense, but the conscious effort to make use of the

discoveries of the laboratory is of comparatively recent date, and—most important to be remembered—what is called the "time-lag" between the new discovery in the laboratory and its commercial exploitation has sometimes been very great. Two generations, for example, passed before Faraday's prophecy that his electro-magnetic experiments might interest a Chancellor of the Exchequer began to be fulfilled.

Although this "lag" tends to diminish as applied science is consciously and systematically cultivated, it must always be considerable in new investigations of a complex kind and of large industrial significance. Twenty years' hard work, again, was necessary to place artificial indigo on the market after its synthesis in the laboratory. The Department itself has been studying the low temperature carbonisation of coal on a "works" scale for seven years, and the fuel research Station up to the present has cost over £400,000. Yet, though the production of smokeless fuel, fuel oil, light spirit, lubricants, and gas, cannot yet be shown to be commercially possible by low temperature treatment of coal, results have been obtained in other directions that have brought savings to industry and the nation exceeding the total expenditure. The general conclusion of the Department will, we think, be generally endorsed, namely, that though science alone cannot save industry, if only because it takes too long to bring about big changes, it can help by making many smaller and quicker improvements in existing practice, and by giving industry the resilience necessary for adapting itself to unforeseen changes.

Oil Removal from Water

A CORRESPONDENT who is contemplating the installation of plant for the removal of oil from water has referred us to the rather bewildering assortment of plant and processes which may now be had for the purpose, and asks us for some guidance in making a final selection. It is not, of course, within our province to draw comparisons between the systems of individual manufacturers, but there can be no question that this is a particular instance where a choice is rendered difficult owing to the fact that entirely different principles are involved, and there is no definitely reliable data to show which principle is the most efficient, commensurate with reasonable capital outlay and cost of upkeep. One of the essentials of an industrial water is that it should be entirely free from oil. Accordingly every precaution must be taken when dealing with, say, boiler-feed water, which is so commonly brought to a degree of pre-heat by the utilisation of exhaust steam of engines. The problem is aggravated by the fact that the oil not only forms a mixture with the water, but is also present as an emulsion, and it is the latter which invariably refuses to yield to mechanical treatment.

For the benefit of our correspondent we may, however, mention that the systems at present employed for oil extraction can be divided into three categories, namely, mechanical means, chemical or physical methods, and electrolysis. The first two have their adherents as well as their sceptics, and perhaps one would not be regarded as being very far from the point in submitting that the electrolytic method is the most scientific and thorough, although the economics of it would demand careful study in each specific case. This system relies on the property of an electric current, when travelling through water, of breaking up an oil emulsion and segregating the oil in the form of a froth which can be readily removed. The whole question of oil extraction must, however, be one of considerable interest and concern to nearly all who are in charge of works operations, and we feel that it would be of interest to our readers generally if some of them would relate how they have surmounted the problem. There is not a great deal of literature on the subject to which reference can be made, but the matter, we believe, was dealt with in comparative detail by Mr. Basil Heastie in a paper he contributed to the proceedings of the Chemical Engineering Group last year.

Books Received

AN INTRODUCTION TO THE PHYSICS AND CHEMISTRY OF COLLOIDS. By Emil Hatschek. London: J. and A. Churchill. Pp. 183. 7s. 6d.

LABORATORY MANUAL OF ELEMENTARY COLLOID CHEMISTRY. By Emil Hatschek. London: J. and A. Churchill. Pp. 153. 7s. 6d.

ELEMENTARY INORGANIC CHEMISTRY. By F. W. Hodges. London: Longmans, Green and Co. Pp. 230. 3s. 6d.

THE (RUSSIAN) JOURNAL OF THE CHEMICAL INDUSTRY. No. 5–6.

THE ALKALI INDUSTRY. By J. R. Parkington. London: Baillière, Tindall and Cox. Pp. 344. 12s. 6d.

FIRST REPORT OF THE FABRICS CO-ORDINATING RESEARCH COMMITTEE OF THE DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH. London: H.M. Stationery Office. Pp. 70. 1s. 9d.

REPORT OF THE COMMITTEE OF THE PRIVY COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH for the year 1924-25. London: H.M. Stationery Office. Pp. 155. 3s.

THE CHEMICAL ACTION OF ULTRAVIOLET RAYS. By Carleton Ellis and Alfred A. Wells. New York: The Chemical Catalog Co., Inc. Pp. 362. $5.00.

THE CHEMISTRY OF WHEAT FLOUR. By Dr. C. H. Bailey. New York: The Chemical Catalog Co., Inc. Pp. 324. $4.00.

The Calendar

Oct. 19	Chemical Industry Club: Annual General Meeting. 8 p.m.	2, Whitehall Court, London, S.W.1.
20	Hull Chemical and Engineering Society: Presidential Address, "The Outlook and Mentality of the Chemist." 7.45 p.m.	Grey Street, Park Street, Hull.
21	Society of Glass Technology: "The Glass Industry and Future Developments." T. C. Moorshead.	Applied Science Dept., University, Sheffield.
21	Institute of Chemistry (London Section): "Alchemists and Chemists in Art and Literature." R. B. Pilcher. 8 p.m.	University College, Gower Street, London.
22	Worshipful Company of Dyers: "How Dyes are Made." Sir Max Muspratt. 6 p.m.	Dyers' Hall, Dowgate Hill, London.
23	Society of Chemical Industry (Glasgow Section): "Chemistry in Mining." William Cullen. 7 p.m.	39, Elmbank Crescent, Glasgow.
23	Engineers' Club: Annual Dinner.	Savoy Hotel, London.
26	Institute of Chemistry (Manchester Section): Annual General Meeting. An account of the discussion on "The Registration of Chemists" at the York Conference will be given by Mr. F. Scholefield.	Manchester.
27	Royal Photographic Society: Annual Dinner.	Holborn Restaurant, London.
29	Institute of Chemistry (Glasgow Section): Annual General Meeting.	Glasgow.
30	The Manchester Literary and Philosophical Society.	Manchester.
Nov. 13	Chemical Industry Club. Annual Dinner.	London.

French Congress of Industrial Chemistry

The Centenary of Chevreul

[From Our Special Correspondent.]

On Sunday last, in the presence of the President of the French Republic, and with M. Paul Painlevé in the chair, a distinguished gathering assembled in the vast hall of the National Museum of Natural History, in Paris, to celebrate the centenary of Chevreul's first published investigations on the Chemistry of the Oils and Fats. It is to him, more perhaps than to any other man, that applied chemistry owes those discoveries which have rendered possible the great development, during the past century, of the soap and candle industries, and of the many subsidiary manufactures which have arisen from the foundations which he laid. It was fitting, therefore, that other nations should share in the occasion, and gratifying to know that our own country was represented by Sir William Pope and Professor H. E. Armstrong.

The proceedings marked the conclusion of the Fifth Congress of Industrial Chemistry which had opened on October 4 in the Grand Palais, in the Champs Elysées. The congress, which is held annually, and is rapidly assuming an international character, is promoted and admirably organised by a permanent committee, the president of which is M. Jean Gérard, general secretary of the French Society of Chemical Industry. The inaugural meeting was attended by some 500 members and delegates representing no less than 18 countries. The chair was occupied by M. Lucien Dior, a former Minister of Commerce, whose welcome to those present was endorsed by M. Borel, the Minister of the Department of Marine, on behalf of the French Government.

It is noticeable that although the congress was devoted to industrial chemistry, metallurgy was allotted a very prominent part in the proceedings. Thus the speech of M. Borel was followed by a lecture by Dr. Leon Guillet, the distinguished metallurgist, who dealt with the progress of the iron and steel industries in France, and bore ungrudging testimony to the contributions made during the nineteenth century by the British metallurgists Bessemer, Siemens, Gilchrist and Thomas.

Sir Robert Hadfield's Address

In a spirit of truly characteristic French chivalry, the place of honour at the inaugural meeting was, however, given to an Englishman, Sir Robert Hadfield, F.R.S., who gave a short sketch of the early history and literature of French metallurgy, and of the influence of the brilliant group of scientists exemplified by Martin Pourcel, Osmond, Le Chatelier, and Dr. Guillet upon modern developments in the science. He congratulated Dr. Guillet upon his recent election as a member of the Academy of Sciences, of which he (Sir Robert) was a corresponding member, and concluded his address by pointing out that the congress bore ample evidence that science knew no boundaries, and by expressing the hope that French and British scientists would co-operate in the future as they had done in the past in working for the welfare of humanity.

The address was received with great enthusiasm, and at its conclusion, Sir Robert Hadfield was unanimously elected an honorary member of the *Société de Chimie Industrielle*. In the evening the members were entertained at a musical soirée at the Hotel Majestic, and on the following morning they settled down to the work of the sections, the meetings of which were held at the Conservatoire National des Arts et des Métiers. Among the other British members who attended the congress were Sir Frederick Nathan (President, Institution of Chemical Engineers), Mr. E. C. Evans, Professor C. S. Gibson, Mr. A. J. Greenaway, Mr. E. A. Hailwood, Mr. V. Henny, Dr. Stephen Miall, Mr. L. P. Sidney, Mr. A. R. Smith, and Mr. E. A. Umney.

During the session devoted to fuels, M. Charles Berthelot contributed a paper on low temperature carbonisation, a subject which was dealt with incidentally by Mr. E. C. Evans in the only paper in this section presented by a British author, and entitled "The Properties and Applications of Smokeless Fuels." Neither paper was favourable to low temperature methods of carbonisation, Mr. Evans being of the opinion that present-day British practice, which was a happy mean between high and low temperature coking, was more economically sound, while M. Berthelot's paper showed that whatever improvements might be expected in the future, low carbonisation reduced the output of valuable by-products when conducted as it has been hitherto.

Nitric Acid Manufacture

The Heavy and Fine Chemical industries were the subject of a meeting at which the Manufacture and Concentration of Nitric Acid was dealt with by M. Kaltenbach, who pointed out that synthetic processes yield an acid of only about 50 per cent. strength, the concentration of which presented difficulties. Its strength could be raised to 65 by heating, but beyond this gravity it became necessary to employ dehydrants, usually sulphuric acid, and that, as the heat evolved on adding that acid was insufficient to volatilise the nitric acid at a sufficiently high degree of concentration, steam heating had to be resorted to. The exact degree of steam heating necessary to secure the best results was a matter of some difficulty, and he described the best method, and the appliances required for solving the problem.

A plea for "Normalising Industrial Chemical Products" was put forward by M. Setlik, who called upon the scientific and industrial organisations in the different countries to endeavour to frame some system of uniform standardisation in regard to products.

Papers on Explosives

M. Georges Patart presided at the session on colouring matters, bleaching, explosives, etc., at which M. J. Bing gave a paper of a general description, which described the raw material and resulting products of what may be called Synthetic Organic Chemistry, and urged the necessity of every country being self-providing in respect of the important key industries enumerated under this heading, and ended with a plea in favour of a protective tariff for France, to enable her to foster and maintain these essential products.

A communication on 2-4-6 Trinitrobenzoic Acid, as it occurs when produced as the result of the photochemical decomposition of 2-4-6 trinitrotoluene, was presented by MM. Kranz and Turek. The Luttgen process has proved perfectly satisfactory for its preparation on condition that the crude product is purified by treating it with sodium carbonate instead of caustic soda. All the trinitrobenzoates hitherto prepared have proved to be crystalline substances, with the exception of the bismuth, tin, and aluminium salts, which are amorphous and have an indefinite constitution. All the trinitrobenzoates explode or detonate either on shock or by the application of heat, except the mercuric and mercurous compounds. The presence of minute quantities of the metallic trinitrobenzoates considerably increases the explosiveness of pure trinitrotoluene. In the presence of moisture trinitrobenzoic acid attacks such metals as lead, copper, and iron very readily, whether air be present or not, and the resulting salts possess the same properties of exploding on heating or on impact. As commercial trinitrotoluene may contain trinitrobenzoic acid, the possibility of such explosive metallic salts being formed should always be guarded against in circumstances where there is any likelihood of their occurrence.

According to G. Pandele, who read a paper on "Safety Considerations as regards Military Explosives," wood cellulose cotton wool is more readily nitrified than cotton cellulose in the same form, and the resulting fulmicottons contain less nitrogen, are more soluble, and retain the mixed acids to a greater extent. They can be made inert in much shorter time than the cotton nitrocelluloses, and are far more stable. They dissolve, moreover, much more readily in ether, requiring only about half as much as ordinary guncotton.

At another meeting the chair was taken by M. H. Binoche, and the subjects read and discussed comprised the chemistry of fats, glycerine, soap, and candles. The "Crystallisation of Fatty Acid" mixtures was the subject of a paper by M. Guiselin. In the separation of fatty acids it is often necessary to ascertain rapidly the relative proportions of hard and soft fats present in a given mixture of crude fats in bulk. Many of the existing methods give uncertain or misleading results.

The crystallisation of fatty acids does not appear to conform to any linear law and a crystallised fatty acid when mixed with an amorphous fatty acid does not necessarily give an average crystallisation. Indeed, two crystallised fatty acids when mixed may give an amorphous mixture, and two amorphous fatty acids, when mixed, may yield a crystallised mixture. The paper dealt with the causes which underlie this phenomenon. A further paper by the same author, on the "Saponification of Fatty Matters under Pressure," was read in this section, besides papers on the "Application of Capillary Analysis to Fatty Acids," by R. Dubrisay, and on "Physical Characters in the Examination of Fatty Matters," by G. Wolff.

Fertiliser Imports into France

The Fertilisers Section was presided over by M. E. Roux, Director of the Institute of Agricultural Research, and the paper by M. Levy on "Ammonia Fertilisers" should interest British manufacturers as showing the extensive market which exists in France for such products. In 1924 the French consumption of ammonia sulphate, which stands first in the list, was 202,000 tons, of which only about 100,000 tons were made in the country itself; of cyanamide the consumption was 55,000 tons, and the home production fell short of the demand by some 10,000 tons. The deficit of ammonia sulphate was made up by exports from Great Britain and Germany, while that of cyanamide was supplied by imports from Sweden, Switzerland, and Poland. The urate group of fertilisers was supplied, to the entire demand of 10,000 tons, wholly from Germany. Incidentally, the author pointed out that the decalcifying action of the ammonia fertilisers has been much exaggerated.

An interesting paper on the use of fertilisers containing high percentages of potash salts was communicated in this section by L. Haumont. Potassium is absorbed by the soil, and it is only by adding it in excess that any remains available for the sustenance and nutrition of crops. Hence there is little danger of using comparatively large amounts of such potash-rich adjuncts, contrary to the usual notions which prevail on the subject. Another paper dealt with the question of developing the nutritive resources of such barren lands as owe their unproductiveness to lack of calcareous constituents, or to the natural absence of phosphoric acid, such as the huge tracts of territory south of Bordeaux, known as the Landes.

Peat as a Fertiliser

A new process for the nitrogeneous enrichment of powdered peat for use as a fertiliser was described by C. Roux. A sample was exhibited which had, to begin with, contained but 2 per cent. of organic nitrogen. By special treatment its total nitrogen content had been increased to 12 per cent., of which 10 per cent. was ammoniacal nitrogen and 2 per cent. organic nitrogen. The peat is subjected to the action of ammonia liquors from any convenient source, such as gas works, coke ovens, etc., and the accompanying antiseptic matters of the phenol and allied groups have been found to possess valuable anti-germ and parasite properties which make them particularly suitable as manures. The process is recommended for adoption at small gas works where the supply of ammonia liquors does not justify the installation of a sulphate plant for their recovery.

The final group of papers was devoted to the organisation of industry and embraced such subjects as the indexing and filing of information, legal control of chemical operations, customs regulations and the reform of patent law. The most important paper presented to this section was undoubtedly that by M. Jean Gérard. He spoke in the threefold capacity of a chemical engineer, of a practising technical journalist, and as the director of the leading body concerned with industrial chemistry in France.

The members and delegates were entertained at a banquet in the course of the proceedings, M. Borel presiding. The closing session was held at the Grand Palais, under the chairmanship of M. Charles Chaumet, the Minister of Commerce, and an address was delivered by Professor H. T. Waterman, of Delft, on the "Refining of Mineral Oils." On the conclusion of the congress a number of the members left Paris by night train to visit the International Water Power Exhibition at Grenoble and the electro-metallurgical works of the Keller-Leleux Co., returning to Paris in time to take part in the Chevreul Centenary celebrations.

Income Tax Reliefs, 1925-26

To the Editor of THE CHEMICAL AGE.

SIR,—The notices of assessment for the above year now being issued should incorporate the beneficial provisions of the last Finance Act, which reduced the rate of tax, gave a higher earned income allowance, and allowed wear and tear and obsolescence claims generally in respect of plant and machinery (including motor cars, fixtures, fittings). A careful check should, therefore, be made to ensure that the most important points at least are clear, such as Schedule "D" on average basis normally, Schedule "E" on current year, earned income allowance of one-sixth (previously one-tenth), personal allowance (single, £135, married £225, wife to £45 if earning income), children allowance (first £36, each other £27), housekeeper £60, widowed mother £60 if looking after child, dependent relative £25, first £225 of taxable income at 2s., and life insurance premiums from 2s. to 4s. per £.

There are other very important, but less known, claims—viz., adjustment on account of excessive return or statement made in error or mistake under Schedule "D," expenses incurred, superannuation contributions, relief on taxed income, untaxed interest ceasing, wear and tear and obsolescence of plant and machinery, Dominion income tax suffered, and also interest on bank and stock brokers' loans.—Yours, etc.,

67-68, Cheapside, E.C.2. W. R. FAIRBROTHER.

Newsvendors' Benevolent Institution

To the Editor of THE CHEMICAL AGE.

SIR,—I shall be obliged if you will allow me to draw attention in your columns to the annual dinner of the Newsvendors' Benevolent and Provident Institution, which will be held at the Hotel Cecil, London, on November 3. The newsvendor works early and late that the public may be provided with their newspapers, and it is the purpose of this institution to provide, for those who may fall by the way, pensions in old age or incapacity or grants and other assistance to members, their widows, and orphans who may be in temporary difficulties. Many newsvendors have only too little opportunity for providing for illness or old age, and this institution gives to those members of the public to whom the newsvendors render a daily service an opportunity to give their thanks in return.

The funds of the Newsvendors' Institution, which was established in 1839, are carefully administered. There are at present sixty-eight pensioners, whose welfare is constantly borne in mind. Sick parents are sent to Convalescent Homes, orphan children are cared for in selected institutions, and financial help is given in cases of need.

As festival chairman for the year, I have great pleasure in making this appeal, to which, I sincerely trust, there will be a generous response. I shall be glad of offers from ladies and gentlemen willing to assist me as stewards.—Yours, etc.,

The Daily Telegraph, FREDERICK LAWSON.
135, Fleet Street, E.C.4.

Fertilisers for U.S. Sugar Beet

As a fertiliser for sugar beet, nitrate of soda has proved profitable when used alone or in combination with acid phosphate and muriate of potash in the fertiliser tests of the Ohio Agricultural Experiment Station in Paulding County. These experiments include 81 tenth-acre plots in a rotation of sugar beets, oats, and clover begun in 1912. The fertilising elements are used alone and in different combinations and in comparison with yard and stable manure. Acid phosphate and muriate of potash have not been used at a profit without the nitrate. An application of 600 pounds acid phosphate, 200 pounds muriate of potash, and 200 pounds nitrate of soda, after paying $19 for the treatment, left a net profit of $16.94 an acre.

Yard manure and stall manure applied at the rate of 10 tons gave increases valued at $17.32 and $19.78 per acre, or nearly $1.75 a ton for the yard and $2 for the stall manure. Sugar factory lime is applied at the rate of two tons per acre on a set of untreated plots, manure plots and fertilised plots, but in no case has it given a profitable increase in the sugar beet crop.

The untreated plots produced an average net yield of eleven tons per acre for the thirteen years of the experiment.

Chemical Trade Returns for September

Exports Down on Last Year's Figures but Up on August Values

IMPORTS of chemicals, dyes, drugs, and colours (excluding mercury) for September totalled £958,402—a decrease of no less than £358,610 on September of 1924 and a decrease also of £94,937 on the previous month of August. Exports are valued at £1,813,368, which represents a decrease of £84,087 on the values for September, 1924, but shows an increase of £73,801 over the returns for the previous month of August this year.

The following detailed figures include some noteworthy changes. There has been a remarkable decline in imports of borax, red and orange lead, sodium nitrate, alizarine, and other dyestuff materials. Tanning extracts are practically halved, and there have been no imports of either synthetic or natural indigo. Glycerin shows a marked increase, and coal tar intermediates have risen from 1 to 72 cwt. White lead figures are more than doubled. Mercury jumps from 6,135 lb. to 107,763 lb.

On the export side it is interesting to note the fluctuations of the sulphate of ammonia market. Italy has dropped out, but Spain and Japan are taking greater quantities. Benzol and toluol have dropped from 117,641 gallons to 473 gallons, and tar oil figures are halved, also naphtha.

Imports

	Quantities. Month ending September 30. 1924.	1925.	Value. Month ending September 30. 1924. £	1925. £
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Acetic .....tons	962	643	43,968	29,766
Acid Tartaric.....cwt.	1,324	2,483	6,905	11,831
Bleaching Materials ,,	5,922	9,943	8,535	6,054
Borax..... ,,	22,977	4,800	27,037	5,471
Calcium Carbide... ,,	65,892	60,805	44,759	39,974
Coal Tar Products value	—	—	9,598	59,209
Glycerin, Crude ..cwt.	94	484	246	1,210
Glycerin, Distilled ,,	33	136	157	486
Red Lead and Orange Lead..... ,,	4,145	1,156	7,873	2,490
Nickel Oxide..... ,,	2,236	1,505	11,491	8,299
Potassium Nitrate ,,	5,768	5,944	6,941	6,816
Other Potassium Compounds .... ,,	174,487	151,337	43,174	50,179
Sodium Nitrate.... ,,	365,637	141,551	237,162	85,235
Other Sodium Compounds..... ,,	19,962	20,956	21,123	13,522
Tartar, Cream of .. ,,	3,494	3,672	13,550	11,752
Zinc Oxide .....tons	796	1,059	28,025	35,858
All other Sorts....value	—	—	309,940	170,573
DYES AND DYESTUFFS—				
Intermediate Coal Tar Products.....cwt.	1	72	31	801
Alizarine ..... ,,	568	53	8,363	1,425
Indigo, natural.... ,,	—	—	—	—
Indigo, synthetic .. ,,	—	—	—	—
Other Coal Tar Dyestuffs..... ,,	3,107	1,459	87,765	32,074
Cutch ..... ,,	5,410	5,334	6,701	10,384
Other Extracts .... ,,	8,695	2,542	27,596	7,812
Extracts for Tanning ,,	113,450	62,051	106,579	62,423
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground ,,	65,626	74,939	15,950	17,769
White Lead (dry).. ,,	7,189	15,251	14,396	30,511
All Other Sorts.... ,,	59,099	75,407	80,922	96,892
Mercury ..... lb.	6,135	107,763	1,062	18,714
Total of Chemicals, Drugs, Dyes, and Colours .....value	—	—	1,318,074	977,116

Exports

	Quantities. Month ending September 30. 1924.	1925	Value. Month ending September 30. 1924. £	1925. £
CHEMICAL MANUFACTURES AND PRODUCTS—				
Ammonium Sulphate—				
To France .....tons	7,637	436	97,890	5,013
Spain and Canaries.... ,,	5,898	10,793	76,599	125,071
Italy..... ,,	218	—	2,835	—
Dutch East Indies..... ,,	1,030	845	14,415	10,432
Japan..... ,,	3,451	5,099	44,527	59,673
British West India Islands and British Guiana .....tons	455	466	5,924	5,518
Other Countries ,,	4,536	3,615	58,633	42,866
Total .... ,,	23,225	21,254	300,823	248,573
Acid Sulphuric ....cwt.	2,530	1,265	2,744	1,447
Acid Tartaric ..... ,,	1,747	1,018	10,487	5,826
Ammonium Chloride .....tons	241	160	6,844	5,608
BLEACHING POWDER..cwt.	25,197	38,758	13,045	19,810
COAL TAR PRODUCTS—				
Anthracene .....cwt.	—	1,116	—	583
Benzol and Toluol galls.	117,641	473	8,068	76
Carbolic Acid.....cwt.	5,484	16,226	12,312	27,178
Naphtha .....galls.	6,862	3,664	759	354
Naphthalene .....cwt.	909	920	829	738
Tar Oil, Creosote Oil, etc.....galls.	2,513,000	1,153,569	94,188	38,014
Other Sorts .....cwt.	29,714	33,598	21,555	21,491
Total....value	—	—	137,711	88,434
COPPER, Sulphate of..tons	216	309	5,262	7,396
DISINFECTANTS, INSECTICIDES, ETC. .....cwt.	32,870	44,787	85,410	115,738
Glycerin, Crude..... ,,	1,842	5,433	4,971	15,720
Glycerin, Distilled ... ,,	12,936	8,239	49,250	31,884
Total .... ,,	14,778	13,672	54,221	47,604
Potassium Chromate and Bichromate..... cwt.	1,961	1,776	4,697	3,609
Potassium Nitrate (Saltpetre) ..... ,,	1,645	1,344	3,254	2,723
Other Potassium Compounds ..... ,,	917	1,044	10,320	17,123
Total .... ,,	4,523	4,164	18,271	23,455
Sodium Carbonate .. ,,	479,986	346,839	124,759	102,046
Soda Caustic ..... ,,	128,314	134,704	104,242	104,068
Sodium Chromate and Bichromate ..... ,,	1,972	1,682	3,629	2,689
Sodium Sulphate .... ,,	208,394	145,562	31,732	20,041
Other Sodium Compounds ..... ,,	36,973	49,384	56,569	67,635
Total .... ,,	855,639	678,171	320,931	296,479
Zinc Oxide .....tons	145	114	5,697	5,202
Chemical Manufactures, etc., All Other Sorts value	—	—	290,189	301,163
Total of Chemical Manufactures and Products (other than Drugs and Dyestuffs).....value	—	—	1,251,635	1,166,735
DYES AND DYESTUFFS—				
Products of Coal Tar cwt.	8,438	9,613	77,041	72,902
Other Sorts ..... ,,	6,953	4,010	8,573	5,403
Total .... ,,	15,391	13,623	85,614	78,305
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground ..cwt.	5,222	2,005	2,355	880
White Lead (dry) .. ,,	14,396	8,697	34,774	21,078
Paints and Colours ground in Oil or Water ..... ,,	34,024	46,628	80,332	109,045
Paints and Enamels Prepared ..... ,,	30,934	26,179	94,829	88,881
All Other Sorts ... ,,	43,806	49,380	92,280	95,561
Total .... ,,	128,382	132,889	304,570	315,445
Total of Chemicals, Drugs, Dyes, and Colours .....value	—	—	1,897,455	1,813,368

Chemical Engineers and the Dust Danger

Discussion of Dr. Gibbs's Paper

THE meetings of the Chemical Engineering Group of the Society of Chemical Industry have for some time now enjoyed a high reputation ; they have attracted an increasing number of technicians, and the fare provided has invariably been of notable interest and practical importance. On Friday evening last week, the opening meeting of a new session was held in the Hall of the Royal Society of Arts, when Dr. W. E. Gibbs read a paper on " Aerosols in Industry." Mr. Garland (chairman of the Chemical Engineering Group) presided, and was supported by the president of the Society of Chemical Industry—Mr. W. J. U. Woolcock, C.B.E. A report of the paper appeared in our last issue, but the meeting itself merits notice, not only on account of the interesting way in which the paper was summarised, but by reason of the discussion which ensued.

Scientific Aspects

What is an " aerosol " ? This question was asked by many of those who were assembled immediately prior to the meeting. The answer was soon forthcoming, because Dr. Gibbs did not indulge in preliminaries, but proceeded direct to his subject. Briefly, an aerosol is matter in a finely divided solid or liquid state, dispersed in a gas. It closely resembles the dispersed systems or sols which are found in water and other liquids. It may take the form of dust, it may be a cloud, or it may be smoke. Whether the substance assumes the form of fine films or is extremely fine dust, its total surface area per unit mass is enormously enlarged. Increased surface connotes increased chemical and physical activity. The popular conception of dust needs to be modified. " Dust " is akin to the German " Dunst "—vapour, implying a finely divided condition, buoyant in air, with the attributes, as it were, of a vapour.

Dr. Gibbs remarked at this juncture that " it will be convenient to denote as ' dusts ' those systems of particles that fall throughout with increasing velocity, as ' clouds ' those systems of particles that ultimately fall with constant velocity, and as ' smokes ' those systems in which the particles are driven about the gas in Brownian motion. We have, therefore, the striking phenomenon of a substance, normally two or three thousand times as heavy as air, forming what is, to all intents and purposes, a permanent suspension or cloud in air. By enabling the dust to remain in suspension in a relatively large volume of gas, this increased buoyancy enables it to exercise with maximum effect the increased chemical and physical activity that is due to its greatly increased surface area."

Smoke Settlement Problems

The foregoing classification, as well as some of Dr. Gibbs's other observations at this stage—particularly those dealing with settlement, and the mathematical aspect—were later contested in an amiable way by Dr. Owen. Unlike Dr. Gibbs, Dr. Owen affirms that smoke does settle ; indeed, he has measured the rate of settlement of tobacco smoke, although agitated. With small particles, Dr. Owen agreed that their motion through a fluid is resisted by a force, which, for a given fluid, is directly proportional to the radius of the particle and to the velocity. With larger particles, settling in two stages, Dr. Owen averred that very soon the velocity becomes equal to the force. On the subject of fogs, Dr. Owen remarked that the London fog was a displacement one, and instanced the fog of Wednesday week last. Aerosols may be formed either by the disintegration and dispersion of a solid or liquid, or by the condensation of a gas or vapour. The finest products of disintegration have a lower degree of dispersion than those which are obtained by condensation. When the particles of an aerosol are cushioned by an adsorbed gas they are less able to come into contact with one another to coalesce, and to form larger particles. Under suitable temperature, concentration and electrical charge conditions, the aerosol becomes flocculated, and the particles form loose " flocks " of the corresponding aerogel. Evidence of such flocks are the zinc oxide fumes from a brass foundry, which are notoriously difficult to recover by washing. How to wet such particles is a problem, as atomised water is invariably ineffective.

The industrial aspects of this subject are no less interesting and important than the scientific ones. All will agree, few will deny, that many industrial operations produce a great deal of fine dust, which accumulates in the surrounding air, to form a persistent haze. Examples need not be cited ; they are common enough. One of the present problems of industry is to remove the dust, so that conditions generally can be rendered more tolerable for those engaged. The merit of any such method lies in its combined efficacy and cheapness. This was rightly emphasised in the discussion by Mr. Stevenson Taylor (a representative of the Home Office), who spoke with knowledge born of practical experience. " Very fine dust," Mr. Taylor observed, " can be satisfactorily removed by a scavenging system, which involves the introduction of air at the bottom of the room, or building, in which the grinding operation takes place, and its withdrawal at the top." Mr. Taylor was not disposed to agree that explosions from dust constitute an even greater industrial risk than from an explosive gas mixture, although he did assert that many works were still being operated with risk ; indeed, manufacturers did not appear to realise the hazard. Dextrine, sugar, starch, soya bean, flour, coal—generally, all carbonaceous materials in the form of a dust cloud, are liable to explode with violence ; similarly, sulphur, vulcanite, and such a substance as aluminium dust (which it is difficult to ignite experimentally) are known to have been responsible for explosions. Another speaker, who is at present investigating coal dust explosions, suggested that there is evidence to lead one to believe that methane, which is found diffused in the atmosphere of the coal mine, may conceivably have a bearing on coal dust explosions.

Industrial Plant

Dr. Gibbs exhibited many interesting slides during the course of his paper, which illustrated industrial plant for dealing with dust and fumes. The cyclone arrangement, which has been adopted largely in practice, was a notable one, and illustrations of the Calder-Fox scrubber and the Cottrell electrical precipitator as applied to sulphuric acid mist were referred to. The Pelouze tar extractor was instanced as a suitable apparatus for dealing with tar fog. By the introduction of an inert gas, thus lowering the oxygen concentration to below 12 per cent., most dusts are rendered harmless. In coal mines, trays or boxes containing stone dust are suspended overhead, and these are tripped up by the pioneering wave, and discharge their contents in the dust-laden air, so that on the advent of the flame it is quenched.

One aspect was overlooked, although it would have been discussed had more time been available. Is not prevention better than cure ? Are chemical engineers directing their attention to the evolution of plant which will prevent the creation of dust ? Why should certain types of mechanical burners be installed which subsequently demand the need of an expensive type of dust chamber, or electrical precipitation plant ? Is it not better to concentrate endeavours on the production of a dust-free burner ? Similarly, many types of drying plant are in use to-day which are responsible for the creation of dust clouds which could be avoided if, in the design of the drying plant, there was a recognition of a few simple chemical engineering principles. In many ways there is room for improvement in plant and apparatus, all of which improvements would conceivably have a salutary effect on the question of aerosols in their relation to the industrial problem.

Professor Williams suggested that Dr. Gibbs's book, *Smoke and Clouds*, had been conveniently condensed in his smaller book, *The Dust Hazard in Industry*, and that his present paper represented the quintessence of the latter. He inquired what was the relationship of activity to the size of the particles. Mr. Woolcock, in his usual charming way, made a few complimentary remarks at the outset of the discussion about Dr. Gibbs, spoke of the instinctive way in which grinding operations were conducted many years prior to our knowledge of aerosols and their bearing on industry, and pronounced a benediction on the Chemical Engineering Group. Altogether, it was an interesting and successful meeting, and a happy augury of what is to follow.

Science and the Community

Professor Findlay's Address at Columbia University

SPEAKING on "The Appeal of Science to the Community" at a meeting of the American Chemical Society at Columbia University, Professor Alexander Findlay, of the University of Aberdeen, urged that men must not make a god of science. Industrialism should not destroy the individual; efficiency, carried too far, degenerated into lust. Science, he asserted, did not make the strongest appeal to thinking men. Its claims should be advanced with moderation. The more eminent a man was in science the less successful he was likely to be in politics.

Excessive Efficiency an Evil

"While we may rejoice," he continued, "that the importance of science in its applications to manufacturing processes, and to the general activities of our workaday life, has been so largely recognised, let us always bear in mind that the gospel of efficiency, though it may bring salvation to our industries, will, if carried into action without regard to higher considerations, be productive of great evil to the people and the country. Efficiency calls for organisation, and organisation demands discipline. The loss of individual freedom, the suppression of the sense of individual responsibility, the destruction of the human values, and the conversion of man into a machine are too great a price to pay for industrial efficiency. From this evil root there can too easily spring the ruthless materialism and lust of power of which recent history has given us an example. Let us beware of making a god of scientific efficiency; it is enough, as also it is necessary, that we make it one of the articles of our creed.

"Powerful as the utilitarian appeal of science undoubtedly is, it does not, I believe, and in the highest interests of mankind and of our western civilisation I hope never will, make the strongest appeal to the minds of thinking men, or to men whose mental horizon lies beyond that of a purely materialistic existence. The numerous inventions which enter so largely into our modern life, the mechanical appliances and material benefits which have come from the applications more especially of physical and chemical science, affect chiefly the machinery of life, and are not the prime movers of men's actions; and over-emphasis of its utilitarian value may, and I believe does, do harm to the highest interests of science. The great danger which we have to face in all our appeals to the community is that while proclaiming the great achievements of science in the creation of pecuniary gain and material prosperity, we lose sight of the idealism of science and destroy the true sense of values by raising the lower above the higher, the material above the spiritual. The real claim of science to fuller appreciation by the community is the cultural, the spiritual, and the moral importance of science.

Science Men and Politics

"Is the claim made on behalf of the man of science not somewhat too arrogant? In connection with some of the practical activities of a government, in the planning and execution of schemes of a technical character, schemes for the conservation and economic utilisation of natural resources, in the practical work of national defence, in the control of the purity of food, etc., the claims of the man of science are indisputable and have been largely recognised. But can we claim for men of science a special place in the general work of government, in the multifarious tasks of adjusting the conflicting claims, prejudices, and aspirations of men not only amongst their own people but as between the different races of mankind?

"The man of science may, in the words of Dr. A. D. Little, have 'moved the earth from the centre of the universe to its proper place within the cosmos'; may have 'extended the horizon of the mind until its sweep includes the 30,000 suns within the wisp of smoke in the constellation Hercules and the electrons in their orbits within the atom,' but as a legislator these achievements will avail him little. It is not the 30,000 suns in the constellation Hercules but the 100,000,000 people of his own country that will claim his attention. It is not the motions of the electrons that he should understand, but the motives which influence human conduct; he should have expert knowledge not of atomic nature but of human nature, and human nature is not amenable to the laws of science. The more eminent a man is in the domain of creative science, the less successful is he likely to be in the field of politics; and to remove him from his laboratory to the legislative chamber would be to waste his special gifts and ability. One may expect to find agreement among men of science regarding the laws of science, but there is no reason to expect any unanimity among them in the domain of civil legislation. We do not strengthen but rather weaken the cause of science by making claims which neither experience nor reason can substantiate.

"While we must urge the claims of science on the grounds both of its practical and spiritual values, we should do so with restraint and moderation, for, in pursuing truth according to the methods of scientific investigation, we must bear in mind that the truth to which we attain is only a partial truth. Let us always remind ourselves of the all-roundness of truth, and let us remember that in our scientific approach we see but one side, one aspect of truth. Let us always recognise that through religion, art, literature, and philosophy we have other paths of approach and see other aspects of the truth."

New York Chemical Exposition

Tenth Annual Session

THE New York Chemical Exposition, which opened on September 27, was a successful representation of every branch of industrial chemistry, according to a report from the *New York Times*, which has just reached us from our American correspondent. The exhibition was held in the Grand Central Palace, of which it occupied three entire floors, and was open to the public in the evenings, prior to which admittance was reserved for members of the industry. The outstanding feature of the Exposition was the Court of Chemical Achievement, the object of which was to give emphasis to the activity of chemical research in America. Various departments of the Federal Government were exhibitors in this special section, and the department of Agriculture showed a model grain elevator, in which minute dust explosions were first produced, these then being prevented by the introduction of inert gas, in presence of which electric sparks failed to cause explosions. The Du Pont interests were represented by the biggest group of products, while another exhibit was sprayed rubber, developed recently by the U.S. Rubber Co. after three years' experimentation. Through this process not only is a stronger and cleaner rubber produced, but it permits transportation to America in tank steamers in its original form.

Lectures in Engineering

A special course of lectures in practical chemical engineering was given during the week under the direction of Professor W. T. Read, formerly of Yale. It was divided into two groups, the first for students not familiar with the processes of chemical engineering, having completed only the theoretical portions of their course. The second section was for advanced and graduate students and for men in the industry who desired what might be termed a very brief post-graduate course. The American Chemical Society held a series of meetings, and many of the papers read were augmented by a series of moving pictures shown in the Palace. In the films the visitor was enabled to study the production of petroleum, sulphur, copper, cement, lime, cane and beet sugar, and other products. Dr. A. H. Little, of Boston, was Chairman of the Advisory Board.

As evidence that the American wood spirit industry is not yet dead, it was represented by six exhibitors, five of them on the ground floor of the Palace, and this was a larger representation than any other single branch of the chemical industry had at the exhibition. That German interests were alive to the occasion, however, was evidenced by the three representatives of the Badische Co., who are reported to have attended the exhibition in the company of a well-known New York chemical importer.

Reducing Freight Charges

THE London Midland and Scottish Railway have just issued a book describing their new system of distribution for traders whereby freight charges are reduced, packing costs and handling are lessened, and a quicker and more efficient service is provided. A copy will be sent on application to Mr. S. R. Hunt, Chief Goods Manager, L.M.S., 24, Euston Station, London, N.W.1.

The Chemical Preservation of Textiles

Government Committee's Report

THE first report of the Fabrics Co-ordinating Research Committee (H.M. Stationery Office, 1s. 9d.), of which Dr. A. W. Crossley, F.R.S., President of the Chemical Society, was chairman, contains some conclusions of particular interest to chemists. A section of the report is devoted to the deterioration of fabrics by light, in which the applications of dyes as preservatives are discussed; another is entitled "The fireproofing of fabrics," while a third part deals with the relative merits of tenting materials which have been treated with various preservatives. The investigations of which the report is the outcome were commenced in 1921, and evidence was received by the Committee from research carried out by the Department of Scientific Research and other bodies, while the experience of the Services, in the matter of uniforms and tents, for instance, was fully considered.

Light Excluding Dyes

In aeroplane construction, the report points out, while dopes are used to produce a drum-tight surface and exclude water, they afford little protection to the fabric against light, although when the varnish contained a khaki-coloured pigment the strength of the fabric was better maintained. In tropical climates the pigment absorbed large amounts of heat, and while this was diminished by the use of a coating of aluminium, or aluminium leaf, it was realised that many advantages would accrue if a stable dye, opaque to destructive rays, could be incorporated with the dope. Experiments were therefore undertaken with a large number of dyes and it was found that, with the exception of spirit black, all faded, cracking earlier and to a greater degree than the undyed dope. With spirit black, however, not only was there no sign of cracking or fading, but in the strength tests the black-doped fabric gave the same results as a comparison frame treated with ordinary dope and khaki-pigmented varnish, showing that a perfectly practicable protection had been attained with the dye alone.

The Fireproofing of Fabrics

With regard to the fireproofing of fabrics, the Committee has initiated further work on the mechanism of fire-extinction by various classes of compounds which it considers to be necessary before definite conclusions can be reached. The report states that the "manner in which fireproofing agents function can hardly be said to be understood" and then enumerates the following causes to which their effect is "presumably" due :—

(1) The salt fuses, with or without chemical decomposition, below the ignition point of the fabric, forming a non-inflammable layer on the latter more or less impervious to air.

(2) The salt may, at temperatures below the ignition point of the fabric, evolve non-inflammable gases, such as steam, carbon dioxide or ammonia, and so tend to extinguish the flame.

(3) The heat of the flame may be absorbed by endothermic changes (including volatilisation) of the fireproofing agent.

(4) The heat of the flame may be dissipated by conduction.

"A cursory survey," the report continues, "of the substances claimed to have fireproofing properties reveals the fact that no general explanation of the action of these salts can be based on any one of the causes outlined above." It is suggested that the most promising line of attack is to follow the changes which take place when fabrics treated with various fireproofing agents are subjected to high temperatures, the examination being made by microscopical, physical and chemical methods. Observation of the charring point, ignition point, and rate of propagation of flame in treated and untreated fabrics should also be undertaken. The effect of the chemicals themselves on the fabrics is also discussed and the work of Durst quoted as showing that the use of acid substances, and those which can form acids by hydrolysis, is undesirable since they cause deterioration of stored fabrics. Ammonium salts are also likely to give trouble in this respect.

The report concludes with the results of experiments on the use of preservatives for tentage and textiles, which is found on the whole to be advantageous. Among the agents listed under particulars of treatment are wax, cuprammonium and other copper salts, aluminium stearate, and Swedish tar.

Society of Public Analysts Meeting

Election of Members

AN ordinary meeting of the society was held at the Chemical Society's Rooms, London, on Wednesday, October 7, Mr. E. M. Hawkins, vice-president, in the chair.

A paper by Messrs. A. R. Powell and W. R. Schoeller, Ph.D., described investigations into the analytical chemistry of tantalum, niobium and their mineral associates: (III.) A new method for the separation of tantalum from niobium, (IV.) The detection and determination of tantalum in niobium compounds. The method, it was explained, is based upon the differential hydrolytic dissociation of oxalotantalic and oxaloniobic acids in presence of tannin in slightly acid solution. The former, on boiling, yields a sulphur-yellow tannin adsorption precipitate, whilst oxaloniobic acid is only dissociated at a much higher concentration and lower acidity, with precipitation of a bright vermilion adsorption tannin complex. On adding oxalic acid to the boiling liquid the niobium precipitate is readily redissolved, whereas the tantalum precipitate is only redissolved at a much higher H-ion concentration. Co-precipitation of the niobium is overcome by fractionation and re-precipitation. The tannin method can also be used for the detection, as well as the determination, of small amounts of tantalum in niobium compounds, and for the identification of the two elements in admixture, the colours of the respective precipitates being characteristic.

Sulphates in Guncotton

In a communication on "The Determination of Sulphates in Guncotton," by Dr. H. B. Dunnicliffe, a modified method was described giving very accurate results when sodium chlorate at low concentrations is used as the oxidising agent. It is based on a series of experiments in which the conditions have been ascertained for complete oxidation of the highly coloured substances in guncotton, while leaving the whole of the sulphur present in the form of soluble sulphates. Incomplete oxidation may be partly due to a low atmospheric pressure in the laboratory. There does not appear to be any direct relationship between the sulphate content and the organic matter insoluble in acetone.

Mr. C. O. Harvey submitted a paper on "The Reduction of Chloric Acid and Chlorates by Ferrous Sulphate." The results obtained by reducing chloric acid and chlorates with a neutral solution of ferrous sulphate were shown by gravimetric and volumetric determinations to be about 3 per cent. too low. Reduction in acid solution gave results about 1 per cent. below theory, and to obtain this degree of accuracy the reduction must be carried out at 100° C. The reaction between potassium iodide and potassium chlorate in the presence of a sulphuric acid solution of ferrous sulphate had also been studied, and the conditions for a rapid volumetric determination of chloric acid (accurate to within 0·8 per cent.) based on the reaction had been ascertained.

Certificates Read

Certificates were read for the first time in favour of Messrs. A. Bruce, B.Sc., F.I.C., F. J. T. Grigg, M.Sc., A.I.C., S. G. Clarke, B.Sc., A.I.C., J. Hanley, F.I.C., A. J. Jones, A.I.C., H. W. Lawrence, F.I.C., F. Mattingley, B.Sc., A.I.C., B. F. Sawbridge, M.A., F.I.C., H. J. Stern, Ph.D., B.Sc., A.I.C., and Major Clive Newcomb, M.D., F.I.C. A certificate was read for the second time in favour of Mr. Theodore Rendle.

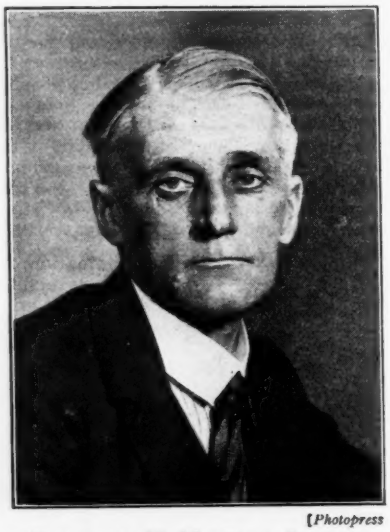
The following were elected members: Honorary member, Professor G. G. Henderson; ordinary members: Messrs. L. Eynon, B.Sc., F.I.C., J. R. Heather, F. G. Hitchman, and W. D. Rogers, B.Sc., F.I.C.

World's Rayon Production

THE world production of rayon this year is estimated by authorities to be from 170,000,000 to 200,000,000 lb. In addition to Great Britain, the industry is progressing in the United States, Germany, Italy, Belgium, Switzerland, Holland, Austria, Poland, Czechoslovakia, Japan, Hungary, Spain, Sweden, and Russia. American authorities are reported to declare that the rayon production will not be at the expense of other textiles, but that it will be one of the greatest potential aids to the revival of the textile industry. It is expected to appear as a supplement rather than as a competitor to cotton and wool.

Death of Professor Maxwell Lefroy

We regret to announce the death of Professor Harold Maxwell Lefroy, after four days of unconsciousness occasioned by his investigations into new gases for the destruction of insect pests. He was aged 48, and had held the professorship of Entomology at the Imperial College of Science and Technology, South Kensington, since 1912, previous to which he had seen service as Imperial Entomologist for India. He made the destruction of insect pests his one work, and his enthusiasm led him to disregard all personal danger. Last Saturday he was found overcome by gas fumes in his laboratory, and at St. George's Hospital he never regained consciousness up to his death on Wednesday evening. During the war he was attached to the Field Force in Mesopotamia to conduct attacks against fly pests.



[*Photopress*

Professor H. Maxwell Lefroy

There were three forms of attack on insect pests in which he specialised. He believed that it was often possible to encourage the natural insect enemies of insects. He had made many observations on the way in which insects were lured by specific scents, and he conducted investigations into appropriate baits for noxious insects.

His favourite method was the employment of suitable chemical poisons, and his investigation of these led him deep into purely chemical work. His laboratory work at the Imperial College, accordingly, was usually extremely unpleasant and often dangerous, and more than once he nearly succumbed to the gases with which he was experimenting, and last March was gassed with "Lewisite," a gas of his own invention which would have been used in the war had it been discovered earlier than 1918.

The Professor was a whole-hearted enthusiast, and it is typical of the man that if anyone benefited by his research and experience he invited them to send a cheque to the London Hospital in accordance with whatever value they felt they had received.

German Steel and Oil Combines

The reports of the formation of a great steel trust in West Germany have now been confirmed by the statement of the *Kölnische Zeitung* that five of the biggest combinations in the German heavy industry are being fused into a unified company with a capital equal to £40,000,000. The firms are Krupps, Thyssens, the Rhine Steel Co., the Phœnix, and the Rhine Elbe Union (one of the chief creations of Hugo Stinnes). The fusion will be effected by the establishment of an entirely new company, the shares of which will be exchanged against those of the constituent undertakings. Another big combination would bring together under one management all the principal independent German oil undertakings. The companies mainly concerned are the German Petroleum Co., Ruetger's Works, and the German Naphtha Co. (Erdöl). It has been stated that the Royal Dutch would have a material interest in the new combine.

Chemical Industry Club's Good Year

At the annual meeting of the Chemical Industry Club on Monday next a favourable report on the work of the year ended August 31 will be presented by the executive committee. The report describes the year, the sixth of the club's tenancy of its rooms in Whitehall Court, as marked by steady development, the increases in membership and in the attendance of members being satisfactory. The membership on September 1, 1924, was 704; elected during the year, 78; losses due to death and lapsed membership, 16; 38 resignations, which took effect on August 31, were received, and the actual membership on September 1, 1925, was 728, this total including 436 town, 234 country, and 58 overseas members. Every five years the Club is required, under the terms of the lease, to re-decorate the premises, and in addition minor repairs, etc., have to be done at other times. The sum of £169 was paid this year on account of the period 1919–24. In the committee's opinion, such payments should be provided for by allocating to a special reserve the sum of £50 each year (if available). The committee also decided to keep in reserve the sum of £200 to cover any liability that might fall upon the signatories to the lease granted by Whitehall Court. The executive committee has continued its policy of making the Club a social centre for all interested in chemistry and its applications, and of furthering co-operation among the manifold societies connected therewith. This year, following a suggestion made by the Club, a dinner is being arranged for all the allied chemical organisations, to be held in the Connaught Rooms on Friday, November 13. During the past summer, the committee extended a hearty welcome to members of the American Institute of Chemical Engineers visiting this country in connection with their joint meeting with the (British) Institution of Chemical Engineers. Mr. H. E. Coley now retires from the chairmanship of the Committee, and his colleagues express their appreciation of the signal services he has rendered during his tenure of office, as well as for his able conduct of the Club's affairs since its inception. The committee also places on record its appreciation of the good work done by the steward and his staff.

A Surplus on the Year

The revenue account shows a surplus on the year's working of £73 2s. 6d. A sum of £72 17s. 1d. remains to be carried forward to next year's accounts after transferring £134 8s. to reserve account in respect of entrance fees received during the year.

British Industries Fair

Record Number of Applications for Space

The eleventh British Industries Fair to be held in London and Birmingham from February 15 to 26 next year promises already in many ways to be the most successful, interesting, and representative of the series. Although forms of application for space have been in the hands of potential exhibitors only a few days over 100,000 sq. ft. of space has already been applied for, and new applications are being received daily. This exceptional demand is, no doubt, due to the fact that so many firms realise the advantage of exhibiting in a Fair, on the advertising of which the Government has decided to expend the sum of £20,000 in a wide-world publicity campaign. Further, the charge for space has been reduced this year at both London and Birmingham, the charge in London being 2s. 6d. per square foot.

Up to the beginning of the present week over 110 different firms had made applications for space at the London Section, and some idea of the value and importance which exhibitors attach to the Fair may be gained from the fact that of the applicants 18 have shown at all the previous fairs, 21 have shown at from six to nine previous fairs, 14 have shown at five, 11 have shown at four, 33 have shown at more than one previous, and 14 are entirely new firms.

The suspension of the London section of the Fair this year was a matter of regret on the part of a very large number of former exhibitors, and particularly to one well-known firm of pottery manufacturers, who have exhibited at the Fair since its inception and who, as a result of it, have regularly increased their sales by over 50 per cent. on the previous year.

From Week to Week

SIR ERNEST RUTHERFORD has resigned from the Council of the Senate of Cambridge University.

A COMPLETE TRANSLATION of the German Customs Tariff including all the recent alterations is published in this week's *Board of Trade Journal*, dated October 15.

MR. C. S. GARLAND is the treasurer of a national association of manufacturers which is now organising a campaign for the further safeguarding of British industries.

IN RENEWING HIS SUBSCRIPTION, one of our readers writes: "I find THE CHEMICAL AGE well worth reading, and bound copies find a place among the essential books to keep me in touch with progress."

A PRESENTATION of his portrait in oils was made by Sir Max Muspratt to Sir Josiah Stamp, director of Nobel Industries, Ltd., and British Celanese, Ltd., on Thursday, October 8, at Liverpool. The presentation was made on behalf of a number of friends at a private dinner.

CAMBRIDGE UNIVERSITY NEWS records the election of Mr. Pierre Kapitza, Ph.D., research student, formerly of the Polytechnisches Institut, Petrograd, to be a Fellow of Trinity College. At Emmanuel College, Mr. C. Rimington is awarded an internal studentship of £150 for research in bio-chemistry.

BLACKIE AND CO., manufacturing chemists, of Tower Bridge Road, London, S.E., posted a notice that union employees would not be required after October 17. Following an interview with officials of the National Drug and Chemical Union, the notice was withdrawn and the union's standard agreement was accepted.

ST. ANDREWS UNIVERSITY AWARDS include the Mathieson Bursary of £50 for two years in the chemistry department, after competition, to Miss Ishbel G. M. Campbell. The Miller Prize to the most distinguished graduate in science for the year 1924-25, to Mr. A. Forrester Skinner, B.Sc., Kingskettle, and Miss C. Cassells Steele, B.Sc., St. Monans.

FOR SELLING PRODUCTION SECRETS to persons in France, two brothers employed at the aniline dye works of the Bayer Co. at Leverkusen were, according to Cologne reports, tried at the Criminal Court at Dusseldorf on Wednesday and each sentenced to two months' imprisonment. The Judge said that the betrayal of such important secrets bordered on high treason.

AT THE TEXTILE EXHIBITION at Manchester, which continues until October 17, Wilson Brothers' Bobbin Co. has an exhibit of chemicals in the form of charcoal, pyroligneous acid, pyrolignite of iron, acetate of lime, wood tar, etc., all of which are extracted from wood waste during the manufacture of bobbins. Humidifiers, purifying, and ventilating plant, and a hygrometer are shown by the Andrew Machine Construction Co.

APPLICATIONS ARE INVITED for two research fellowships in the Department of Glass Technology, Sheffield University. The fellowships are tenable for two years and are of the value of £175 for the first, and £200 for the second year. Candidates should be honours graduates with special training in Physical and Inorganic Chemistry; or Glass Technology, Metallurgy, or Ceramics; or Physics. Full details from Mr. W. M. Gibbons, registrar, forms to be returned before October 24.

THE SALE IS ANNOUNCED for about £20,000 to C. E. Peel and Sons, Ltd., Swansea, of the old works known as Pritchard's Chemical Works on the Crymlyn Burrows at Swansea, and their purpose is to dismantle the works entirely. These works were established by the late Mr. J. D. Pritchard nearly a century ago and in years gone by had a great production of oxalic acid, but owing to German competition the company in possession five or six years ago went into liquidation and since then the works have been idle.

AN APPEAL FOR £500,000 to mark its coming of age is being made by Leeds University for the erection of new buildings. New laboratories are required for medicine, surgery, etc., and for the departments of pathology and bacteriology. The researches of investigators are being hampered by lack of room, and physics, physical chemistry, and organic chemistry are housed in inadequate wooden structures. By Thursday it was announced that over £111,000 had been received and donors included Joshua Tetley and Son, Ltd., brewers, Leeds, £20,000; Reckett and Sons, Hull, £5,000; The South Metropolitan Gas Co., London, £2,500.

A REMARKABLE explosion during an operation was revealed at the inquest on Lawrence H. Sims, 16, of East Ham, on Thursday, October 8. As the result of an accident he sustained a fractured jaw, and for the operation ether and oxygen were employed for the anæsthetic. It was necessary to keep the patient's teeth dry, and a dental syringe was used for applying warm air. On the third application of warm air a violent explosion occurred in the boy's throat, and he died, following acute hemorrhage. Medical witnesses stated that such an instance was unknown, and the treatment was a very general one. Apparently the explosion resulted from the mixture of the vapours, and there was no naked light within six feet of the patient. A verdict of Accidental Death was returned.

DR. G. VON HEVESY has been offered the professorship of physical chemistry in the University of Freiburg.

SIR ALFRED MOND left London on Saturday, October 10, on a business visit to Paris. On Monday he lunched with the French Prime Minister, M. Painlevé. He returned to London on Tuesday.

A WORKMAN WAS FATALLY GASSED while working in the purifying room of Liverpool Gas Works on Saturday, October 10. It is presumed that he was attending to a leakage.

MAJOR E. J. ATKINSON, of the U.S. Chemical Warfare Service, has arrived at San Francisco to take charge of the Chemical Warfare Service office of the 9th Corps Area. He was formerly assistant military attaché at the Court of St. James, London.

TWO MEN WERE GASSED while working in a lime kiln at the works of W. F. Pennington, Ltd., Kendal, on Saturday, October 10. Mr. W. F. Pennington, manager of the works, and another workman who went to their rescue were also overcome, and the men were removed to hospital.

FROM 42 APPLICANTS, Mr. Raymond B. Butler, a lecturer in chemistry at the Northern Polytechnic Institute, London, has been appointed headmaster of the chemistry department at Plymouth Technical School in succession to Dr. J. R. Thackrah, who has resigned. He is taking up his new duties immediately.

MR. J. J. GITTINGS, managing director of Gittings and Hill, Ltd., Tower Varnish Works, Nechells, Birmingham, for over 25 years, has retired from active management, and will be succeeded by his son, Mr. C. J. Gittings, and Mr. R. M. Hills as joint managing directors. Mr. Gittings, senr., will still act in an advisory capacity.

IN THE COMPANIES' WINDING-UP COURT on Tuesday, Mr. Justice Romer made an order for the compulsory liquidation of Hadfield's Chemical Works, Ltd., on the petition of Mr. E. N. Tribe. Mr. Byrne, for the latter, said he was a judgment creditor for £500, and on August 21 the Official Receiver was appointed liquidator. There was no opposition to the petition.

THE TRADE COMMISSIONER AT TRINIDAD will be pleased to grant London interviews from October 19 to November 2 to manufacturers or merchants interested in trade with the British West Indies. Interviews may be made by appointment and applications should be made to the Comptroller-General, D.O.T., 35, Old Queen Street, London, S.W.1., quoting reference 5906/T.G.

IN ADDITION to the first four issues of the new Russian Journal of Chemical Industry, published at Moscow, noticed in our last issue, two additional numbers, 5 and 6, have now reached us, completing the first volume. The journal, which was originally bi-monthly, will for the future appear on the first of each month. A new section has been introduced, in which readers are invited to ask for technical information and are promised expert advice.

AT THE CONVERSAZIONE of the Institution of Petroleum Technologists, reported last week, a further exhibitor was John J. Griffin and Sons, Ltd., of Kemble House, Kingsway, London, W.C.2. The firm exhibited a complete range of the oil testing apparatus described in the specifications of the Institution of Petroleum Technology. A special pamphlet (K. 2) has been prepared on the subject. This, and any other descriptive lists of the firm's extensive range of laboratory apparatus, may be had on application.

RECENT GIFTS TO BIRMINGHAM UNIVERSITY include a model of oil well drilling apparatus, from the European Oil Industry Co., Ltd.; funds to provide a valuable scholarship in the Oil Engineering and Refining Department from Stewarts and Lloyds, Ltd.; funds to provide for the award of a medal in the Oil Engineering and Refining Department from Sir John Cadman; and £2,250 from the Brewers' Society, to be used in the School of Malting and Brewing solely for technical education purposes in connection with the brewing industry.

THE FUTURE OF WEMBLEY is still undecided, but many plans have been put forward in different quarters. It is possible that some of the outstanding features may be preserved on the existing site, as it is understood that one of the proposals of the Special Inquiry Committee is to utilise part of the estate for a permanent record of the Empire. Another scheme is that the Imperial War Museum should be housed there, and that the Dominion pavilions should show permanent representative exhibits. It is also suggested that the amusement and garden sections be continued, and the Stadium retained for staging important displays.

Obituary

MR. T. E. WORRINGHAM, for many years director of Worringham and Co., oil manufacturers and refiners.

MR. ROBERT SMITH, head of Flimpton and Smith, oil and seed brokers, of Hull, and for four years chairman of the Hull Seed and Oil and Cake Association.

DR. ANDREW GRAY, aged 78, Emeritus-Professor of Natural Philosophy at Glasgow University, where he succeeded Lord Kelvin. He was previously Professor of Physics at University College, Bangor, and had written extensively on scientific subjects. During the war he joined the special panel of experts at the Ministry of Munitions.

References to Current Literature

British

CASEIN. Casein and its industrial applications (with special reference to Canada). Part I. *J.S.C.I.*, October 9, 1925, pp. 986–995.

CELLULOSE. The oxidation of cellulose. H. Hibbert and J. L. Parsons. *J.S.C.I.*, October 9, 1925, pp. 473–485 T.

COMPLEX COMPOUNDS. Researches on chromammines. Part II. Hydroxopentamminochromic salts and electrical conductivities of chromammines. H. J. S. King. *Chem. Soc. Trans.*, September, 1925, pp. 2,100–2,109.

ELECTRO-CHEMISTRY. Electrometric studies of the precipitation of hydroxides. Parts I.–IV. H. T. S. Britton. *Chem. Soc. Trans.*, September, 1925, pp. 2,110–2,159.

NITRO COMPOUNDS. Some notes on nitro compounds with special reference to the nitration of *m*-chloronitrobenzene and *p*-chlorotoluene. H. H. Hodgson. *J. Soc. Dyers and Col.*, October, 1925, pp. 327–329.

The action of nitrogen dioxide on anthracene derivatives. E. de B. Barnett. *Chem. Soc. Trans.*, September, 1925, pp. 2,040–2,044.

OILS. A contribution to the chemistry of drying oils. Part IV. G. W. Ellis. *J.S.C.I.*, October 9, 1925, p. 486 T.

OZONE. The thermal decomposition of ozone. R. O. Griffith and A. McKeown. *Chem. Soc. Trans.*, September, 1925, pp. 2,086–2,096.

PHOTO-CHEMISTRY. The effect of ultra-violet light on dried hydrogen and oxygen. H. B. Baker and M. Carlton. *Chem. Soc. Trans.*, September, 1925, pp. 1,990–1,992.

ROSINS. Some constituents of French and American rosins. Part II. E. Knecht and E. Hibbert. *J. Soc. Dyers and Col.*, October, 1925, pp. 329–333.

VISCOSITIES. On the relation between the viscosities of liquids and their molecular weights. D. B. Macleod. *Trans. Faraday Soc.*, August, 1925, pp. 151–159.

United States

COLLOIDS. Colloid chemistry of colour varnish. Part I. Behaviour of surface films. F. E. Bartell and M. Van Loo. *J. Ind. Eng. Chem.*, September, 1925, pp. 925–929.

Colloid systems in nitrobenzene. F. S. Brown and C. R. Bury. *J. Phys. Chem.*, October, 1925, pp. 1,312–1,316.

The limited significance of hydrogen-ion concentration as a factor in determining the condition of lyophilic sols. H. R. Kruyt and H. C. Tendeloo. *J. Phys. Chem.*, October, 1925, pp. 1,303–1,316.

DECOLORISING. The decolorisation of carbon disulphide solutions of iodine by red phosphorus. R. N. Traxler and F. E. E. Germann. *J. Phys. Chem.*, September, 1925, pp. 1,119–1,124.

Improved tube for determination of decolorizing value of soils. D. V. Moses and J. H. Griffith. *J. Ind. Eng. Chem.*, September, 1925, p. 901.

ETHERS. Chloro-ethers. Part II. Preparation of some new chloro-ethers and alkoxymethyl esters. J. W. Farren and H. R. Fife. *J. Amer. Chem. Soc.*, September, 1925, pp. 2,419–2,423.

FILTRATION. Influence of curvature on air saturation of water and its relation to the air-binding of filters. J. R. Baylis. *J. Ind. Eng. Chem.*, September, 1925, pp. 974–979.

KETONES. Some new derivatives of cyclohexanone. C. E. Garland and E. E. Reid. *J. Amer. Chem. Soc.*, September, 1925, pp. 2,333–2,340.

OILS. A chemical investigation of chaulmoogra oil. Part I. T. Hashimoto. *J. Amer. Chem. Soc.*, September, 1925, pp. 2,325–2,333.

PLASTICS. Plasticity. E. C. Bingham. *J. Phys. Chem.*, October, 1925, pp. 1,201–1,204.

Plasticity as applied to viscose and artificial silk. C. S. Venable. *J. Phys. Chem.*, October, 1925, pp. 1,239–1,244.

Plasticity in relation to gelatin. S. E. Sheppard. *J. Phys. Chem.*, October, 1925, pp. 1,224–1,232.

TANNING. Effect of sodium chloride on hydrogen-ion concentration and stability towards alkali of chromic chlorides. K. H. Gustavson. *J. Ind. Eng. Chem.*, September, 1925, pp. 945–952.

THERMO-CHEMISTRY. The heats of oxidation of carbon monoxide and of hydrogen by manganese dioxide at 0° C. J. C. W. Frazer and C. E. Greider. *J. Phys. Chem.*, September, 1925, pp. 1,099–1,104.

Heat of formation of lead carbonate. A. L. Marshall and B. Bruzs. *J. Phys. Chem.*, September, 1925, pp. 1,184–1,186.

French

ALCOHOLS. The preparation of alcohol by chemical methods. Part III. E. Girod. *Rev. Chim. Ind.*, September, 1925, pp. 273–275.

Farnesol. J. Grosjean and J. Martinet. *Chim. et Ind.*, September, 1925, pp. 363–367.

EXPLOSIVES. Some nitrogen-containing explosives. A. B. Lorges. *Rev. Chim. Ind.*, September, 1925, pp. 270–272.

FERMENTATION. The chemical mechanism of the principal fermentation reactions of glucose. M. Lemoigne. *Bull. Soc. Chim.*, September, 1925, pp. 1,089–1,106.

FUEL. Methods for the production of light oils for internal combustion engines. Part II. M. Brutzkus. *Chim. et Ind.*, September, 1925, pp. 358–362.

RADIOACTIVITY. The industry of radioactive substances. C. Matignon and G. Marchal. *Chim. et Ind.*, September, 1925, pp. 343–357.

REDUCTION. Electrolytic reduction of boiling solutions of benzoic acid. V. Decans and J. Dufour. *Bull. Soc. Chim.*, September, 1925, pp. 1,167–1,174.

Hydrogenation of cyclic and acyclic aldazines and ketazines with aluminium amalgam. H. Mazourewitch. *Bull. Soc. Chim.*, September, 1925, pp. 1,155–1,167.

Russian

SYNTHETIC DYESTUFFS.—The technical production of synthetic di-methyl-indigo. N. D. Felinsky and B. V. Morkoff. *Journal of Chemical Industry* (Russian), Vol. I, No. 5-6, pp. 2–9.

German

ALDEHYDES. The bromination products of paraldehyde. A. Stepanow, N. Preobraschensky and M. Schtschukina. *Ber.*, September 16, 1925, pp. 1,718–1,723.

BERYLLIUM. The preparation of beryllium. A. Stock, P. Praetorius and O. Priess. *Ber.*, September 16, 1925, pp. 1,571–1,580.

DIFFUSION. Diffusion of iodine in single and mixed solvents. J. Groh and I. Kelp. *Z. anorg. u. allg. Chem.*, September 11, 1925, pp. 321–330.

HYDROGENATION. The non-catalytic hydrogenation of thionaphthene. R. Fricke and G. Spilker. *Ber.*, September 16, 1925, pp. 1,589–1,601.

LEAD COMPOUNDS. Lead bromate and diacetato-diplumbobromate. E. Günzel and E. Marcus. *Z. angew. Chem.*, October 8, 1925, pp. 929–930.

OXIDES. Study of the higher oxides of silver. Part I. Ag_2O_3. F. Jirsa. *Z. anorg. u. allg. Chem.*, September 25, 1925, pp. 130–140.

PHOTO-CHEMISTRY. On the chemical action of light. H. John. *Ber.*, September 16, 1925, pp. 1,563–1,565.

REDUCTION. Reduction of tantalum pentachloride. O. Ruff and F. Thomas. *Z. anorg. u. allg. Chem.*, September 25, 1925, pp. 1–18.

The reduction of tungstates. V. I. Spitzin. *Z. anorg. u. allg. Chem.*, September 25, 1925, pp. 69–83.

THIO COMPOUNDS. Thio-ketones. A. Schönberg. *Ber.*, September 16, 1925, pp. 1,793–1,801.

1-thiopyrones and 1-thiopyranones. F. Arndt, P. Nachtwey and J. Pusch. *Ber.*, September 16, 1925, pp. 1,633–1,644.

Thiochromanones and transformation products. F. Krollpfeiffer. *Ber.*, September 16, 1925, pp. 1,654–1,676.

Patent Literature

Abstracts of Complete Specifications

239,252. COLLOIDAL SULPHUR, MANUFACTURE OF. Burt, Boulton and Haywood, Ltd., F. C. Elphick, and J. R. Gray, Prince Regent's Wharf, Silvertown, Victoria Docks, London, E.16. Application date, March 8, 1922.

A polysulphide of an alkali or ammonium is precipitated by the addition of an acid in the presence of a colloid such as gelatine, glue, gum, or waste sulphite cellulose liquor. The precipitated sulphur separates rapidly, and is filtered and washed to remove alkali sulphate. The colloidal sulphur will remain in suspension in water, and does not lose this property when dried. The addition of an electrolyte such as sodium chloride may be necessary to ensure rapid settling of the sulphur after precipitation. Reference is directed in pursuance of Section 8, Sub-section 2 of the Patents and Designs Acts of 1907 and 1919, to Specification No. 177,103.

239,551. PHOSPHATE FERTILISER, MANUFACTURE OF. L. Adelantado, 76, Paseo de Gracia, Barcelona, Spain. Application date, March 5, 1924.

The object is to obtain a mixed fertiliser containing nitrogen potash, and phosphoric acid, which is neutral and soluble in the usual solvents. Calcium phosphate rock is treated with sulphuric acid and sulphates, to obtain a mixture of neutral phosphates. No hydrofluoric acid escapes, and little carbon dioxide, and no den of the usual type is necessary. In an example, the starting material is gafsa mineral phosphate having approximately the following composition :—tricalcium phosphate 60 per cent., calcium oxide otherwise combined 8 per cent., alumina 1 per cent., iron oxide 0·68 per cent., silica 8·1 per cent., sulphur trioxide 2 per cent. 100 parts of this phosphate are mixed with sulphuric acid of 53° Bé 28 parts, ammonium sulphate of 95 per cent. purity 58 parts, and water 50 parts, and the temperature rises to 40° C. After three days it is found that the mixture contains less than 1 per cent. of phosphoric acid in insoluble form. To obtain a mixed fertiliser, the phosphate may be treated with nitre cake, and organic matter such as peat or sewage sludge or other industrial residues may be added. Acid sulphates or other salts which yield sulphuric acid on hydrolysis may be employed in the process in place of sulphuric acid.

The product contains one or more neutral water-soluble phosphates of the type K_2HPO_4, and one or more neutral phosphates insoluble in water but soluble in citric acid or ammonium citrate solution of the type $CaHPO_4$. This process has the advantage over the usual phosphate process in that fewer steps are required, and the neutral product has no destructive action on the bags in which it is packed. Compare Specification No. 191,129 (See THE CHEMICAL AGE, Vol. VIII, p. 151).

239,556. CONVERSION OF HYDROCARBON OILS INTO LIQUIDS OF LOWER BOILING POINT. G. F. Forwood, Mark Lane Station Buildings, London, E.C.3; and J. G. Taplay, 45, Sternhold Avenue, Streatham Hill, London, S.W.2. Application date, March 15, 1924.

Oils are converted into lower boiling products by passing them in the form of vapour or spray with steam through a heated retort containing vegetable or animal charcoal or carbonaceous residues of mineral shale. The object is to activate the carbon in the retort, and to accelerate its action by the use of a catalyst such as sodium or potassium carbonate, metallic nickel, cobalt, aluminium, or magnesium, or oxides of these, silica gel, ferrous hydroxide gel, sulphide of iron, etc. Substances capable of liberating hydrogen are also desirable, such as ammonia, sulphuretted hydrogen, etc. The finely divided metal may be mixed with the oil which is sprayed into the retort. The temperature in the retort may vary from 300°—1,000° C. according to the oil to be treated. The gases produced by cracking and hydrogenation may be freed from sulphuretted hydrogen and carbon dioxide, and repassed through the retort.

239,558–9. LEAD CHLORIDE, TREATMENT OF, AND THE APPLICATION TO THE TREATMENT OF LEAD ORES, OR THE LIKE. S. C. Smith, and The Chemical and Metallurgical Corporation, Ltd., 701, Salisbury House, London Wall, E.C.2. Application date, March 15, 1924.

239,558. The object is to convert lead chloride into lead sulphate, which is more readily smelted than lead chloride and is more readily precipitated from alkali chloride solutions and other chloride solutions leaving practically no lead in solution. The lead chloride or basic chloride is dissolved or suspended in water or in a solution of an alkali chloride, an alkaline earth chloride, magnesium chloride, or ammonium chloride, and is treated with a sulphite or acid sulphite. Alternatively, an oxide, hydroxide, or carbonate of a metal may be added, and sulphur dioxide passed into it. The lead chloride should be finely divided either by grinding or by precipitation. The sulphite solution may be obtained from an oxide or oxidised ore, *e.g.*, roasted blende may be leached with an aqueous solution of sulphur dioxide. A number of examples are given, including a process for treating sulphide ores containing zinc. The ore is roasted to convert the zinc sulphide into zinc oxide, leaving a residue containing lead and silver sulphates, and the roasted ore may be suspended in water and treated with sulphur dioxide to obtain zinc sulphite. The residue containing lead and silver sulphates is treated with a hot chloride solution, filtered, and the silver removed. The remaining lead chloride is then treated with the solution of zinc sulphite to obtain lead sulphite.

239,559. The process is for converting lead chloride into lead sulphate. It has been found that lead sulphate is practically insoluble in zinc chloride solutions containing more than about 20 per cent. zinc chloride, and that lead chloride in suspension undergoes double decomposition with zinc sulphate to give pure neutral lead sulphate and zinc chloride solution free from lead. This reaction may be accelerated by heating or agitation. In the application of the treatment to a lead-zinc sulphide ore, the ore is heated with zinc chloride to obtain lead chloride and zinc sulphide. The mixture is leached with acidified hot brine to dissolve out the lead chloride which is then precipitated by pouring into cold water. The zinc sulphide residue is then roasted to obtain zinc sulphate, which is then employed for double decomposition with the lead chloride. Other examples are given.

239,672. GAS PURIFIERS. R. M. Brooke of Foundries, Ltd., Ovenden, Halifax, Yorks. Application date, August 7, 1924.

Each purifier of a group of gas purifiers is provided with a valve casing divided into two sections, one connected to the bottom and the other to the top of the purifier. Each of the sections is provided with a number of valves according to the number of purifiers. One of the valves is connected with the gas inlet main, and another with the outlet, the remainder being connected with the requisite number of return mains for circulating the gas from one purifier to another. Any number of the purifiers may thus be in use simultaneously, working in any order either backward or forward, in rotation or out of rotation, with either an upward or downward flow of gas. The purifiers may also be worked in parallel. The specification describes the valve arrangements in detail.

239,744. HIGHLY ACTIVE CARBON, PROCESSES OF MANUFACTURING. J. H. Brégeat, 24, Rue de la Fidelite, Paris. Application date, December 6, 1924.

A highly active charcoal is obtained by agglomerating charcoal dust with a solution of sodium silicate either alone or mixed with a solution of casein in an alkali or a solution of a soluble gum. The resulting paste is moulded as required, dried, and then impregnated with hydrochloric acid, which precipitates silica in gelatinous form in the charcoal. The resulting sodium chloride is washed out, and the product dried and calcined at 600°–1,000° C. Instead of sodium silicate, solutions of iron or aluminium salts mixed with a binding agent, such as gums, glues, solubilised casein, etc., may be used. The metal hydroxides are precipitated in the charcoal by adding alkali. The resulting charcoal has a very high activity and durability in use.

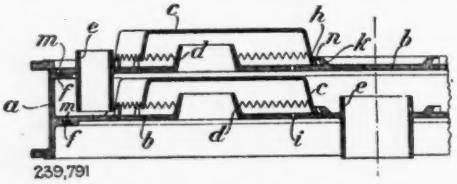
239,758. SODIUM PENTABORATE DIRECT FROM BORON ORES, PROCESS FOR PRODUCTION OF. Borax Consolidated, Ltd., 16, Eastcheap, London, E.C.3. and A. A. Kelly, 57, Chancery Lane, London, W.C.2. Application date, December 18, 1924. Addition to 180,110.

Specification No. 180,110 (see THE CHEMICAL AGE, Vol. VI, p. 881) describes the production of sodium pentaborate by

treating boron ore in suspension in water with sulphur dioxide. In this invention, the boron ore is treated with sulphur dioxide until the bulk has become saturated, when a calculated amount of untreated ore is added, and the mixture heated in water preferably containing a small quantity of sodium sulphate. In some cases the portion of the ore which has not become saturated with sulphur dioxide may be sufficient to avoid the necessity for adding a further quantity of untreated ore, but if a larger proportion of sulphur dioxide has been absorbed, an addition of untreated ore will be necessary. This process for directly treating the ore involves less analytical control.

239,791. Distillation and Like Columns. The Firm Carl Still, and A. Kuhn, 4, Bismarck Platz, Recklinghausen, Westphalia, Germany. Application date, March 24, 1925.

The horizontal plates *b* of a distillation column are provided with distributing hoods *c* over vapour inlets *d*, and the usual overflow outlets *e* are arranged alternately at the centre and circumference of the plates. Small holes *i* are provided by which the column is emptied at the end of the process. The plates *b* rest on lugs *f* projecting from the casing *a*, the edges being bevelled so that a groove *m* is formed with sides tapering towards the top. This groove is filled with molten lead, which provides a rigid connection between the plate *b* and the casing *a*, and prevents leakage. The distributing hoods *c*



239,791

are each provided with three lugs *h* engaging with corresponding lugs *k* on the upper side of the plate *b*, thus forming a similar groove *n* which is filled with lead. This provides a rigid construction which may be taken apart when required, by mechanically removing or melting out the lead.

Note.—Abstracts of the following specifications which are now accepted, appeared in The Chemical Age when they became open to inspection under the International Convention :—222,137 (Synthetic Ammonia and Nitrates, Ltd.), relating to a synthetic ammonia process, see Vol. XI, p. 560 ; 225,862 and 230,055 (Farbenfabriken vorm. F. Bayer und Co.), relating to manufacture of azo dyes, see Vol. XII, pp. 138 and 484 ; 231,134 (Norsk Hydro-Elektrisk Kvaelstofaktieselskab), relating to production of ammonia from gases containing hydrogen cyanide, see Vol. X , p. 537 ; 231,801 (L. Lilienfeld), relating to manufacture of new cellulose compounds, see Vol. XII, p. 591.

International Specifications not yet Accepted

238,225. Dyes. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, August 9, 1924.

Aminodibenzanthrone and its derivatives such as the dimethyl compound obtained by nitrating and reducing dimethyldibenzanthrone, are treated in solution or suspension with oxidising agents such as chromic acid (in acetic acid suspension), sodium chlorate (in dilute sulphuric acid suspension), or nitrosylsulphuric acid, to obtain vat dyes which give black shades on cotton, fast to chlorine.

238,253. Celluloid. A. Romahn, 3, Kniphofstrasse, Steglitz, Berlin. International Convention date. August 9, 1924.

An ester or ether of cellulose, *e.g.*, nitrocellulose 75 kg. containing 25 per cent. alcohol, is kneaded with acetanilide 25 kg., in alcohol 60 litres, and the plastic mass passed through hot rolls to evaporate the alcohol.

238,520. Acetaldehyde. Soc. Chimique des Usines du Rhône, 21, Rue Jean Goujon, Paris. International Convention date, August 14, 1924.

Acetylene mixed with 2–20 per cent. of oxygen is bubbled through a solution of ferrous and copper sulphates containing sulphuric acid and also metallic mercury, heated to 60°–80° C. Acetaldehyde is produced.

238,523. Dyes. Farbwerke vorm. Meister, Lucius, und Brüning, Hoechst-on-Main, Germany. International Convention date, August 13, 1924.

Vat dyes are obtained by fusing di- or poly-α-anthrimides with condensing agents and then oxidising the products, and these dyes are treated with concentrated sulphuric acid, with or without boric acid, and then further oxidised. In an example α-α-dianthrimide is fused with aluminium chloride, oxidised, heated to 75°–110° C. with concentrated sulphuric acid or monohydrate, with or without boric acid, and oxidised with hypochlorite solution. The products give fast yellow shades on cotton.

238,543. Hafnium and Zirconium Compounds. Naamlooze Vennootschap Philips' Gloeilampenfabrieken, 6, Emmasingel, Eindhoven, Holland. International Convention date, August 13, 1924.

Ores are treated with sulphuric and phosphoric acids and the phosphates of hafnium and zirconium are separated from the liquor and dissolved in alkali containing hydrogen peroxide or an organic compound containing an alcohol group attached to one carbon atom and an alcohol or carboxyl group attached to an adjacent carbon atom. Such compounds include glycerine, glucose, cane sugar, pyrocatechin, pyrogallol, lactic and tartaric acids and divalent alcohols having adjacent alcohol groups. The solution is freed from iron by sulphuretted hydrogen, and the phosphoric acid removed by precipitating with barium chloride. Zirconium hydroxide may then be precipitated by neutralising, or the organic substance may be oxidised with potassium persulphate and the hafnium and zirconium precipitated by a base. Alternatively, the alkaline liquor free from phosphoric acid is evaporated to dryness to decompose the organic compounds, or the peroxides of hafnium and zirconium can be precipitated by adding hydrogen peroxide to the acidified solution. Several other alternatives are described.

Latest Notifications.

240,801. Sulphuric acid process and apparatus. Grasselli Chemical Co. October 4, 1924.

240,814. Manufacture of hydro-cyclic-w-amino-alkyl-compounds. Rupe, Dr. H. October 1, 1924.

240,834. Process for the production of aluminium chloride and alumina. Chemische Fabrik Griesheim-Elektron. October 2, 1924.

240,840. Process for the treatment of condensation products of carbonide or its derivatives with aldehydes. Pollak, F. October 1, 1924.

240,852. Manufacture of finely subdivided pigment dyes. Farbwerke vorm. Meister, Lucius, und Brüning. October 1, 1924.

240,859. Manufacture of 1 : 4 : 5 : 8-naphthalenetetracarboxylic acid and its derivatives. Farbwerke vorm. Meister, Lucius, und Brüning. October 2, 1924.

240,871. Synthetic manufacture of liquefied ammonia. Patart, G. October 6, 1924.

Specifications Accepted with Date of Application

218,294. Wet carbonisation of vegetable materials, especially wood, Process for. C. G. Schwalbe. June 25, 1923.

218,647. Treating ore in blast furnaces by the injection of powdered combustible concurrently with the use of a charge of coke. Soc. Anon. Commentry, Fourchambault, et Decazeville. July 3, 1923.

220,651. Removal of carbon monoxide from gaseous mixtures by means of cuprous solutions. Synthetic Ammonia and Nitrates, Ltd. August 16, 1923.

223,221 and 236,146. Barbituric acid derivatives, Manufacture of. J. D. Riedel Akt.-Ges. October 10, 1923, and June 28, 1924. 236,146 addition to 223,221.

225,821. Ammonia-oxygen mixtures, Process for the catalytic combustion of. I. W. Cederberg. December 4, 1923.

231,885. Disazo dyes. Manufacture of. Farbenfabriken vorm. F. Bayer und Co. April 4, 1924.

235,598. Arylesters of nitro-amino-sulphonic acids of the benzene series, Manufacture of. Farbenfabriken vorm. F. Bayer und Co. June 14, 1924.

240,201. Cracking mineral oils, Apparatus for. T. A. Smith, R. Pitkethly, and E. S. L. Beale. May 22, 1924.

240,223. Arsinic acids, Production of. A. J. Ransford and A. Carpmael. (*L. Cassella and Co., Ges.*) June 24, 1924.

240,224. Scrubbers for scrubbing gases and vapours. W. A. S. Calder and W. H. Palmer. June 24, 1924.

240,228. Concentration or separation of minerals. A. A. Lockwood. June 25, 1924.

240,253. Purification of sugar solutions. K. Urban. July 9, 1924.

240,293. Mordanting and dyeing cellulose acetate materials. British Dyestuffs Corporation, Ltd., L. G. Lawrie, and H. Blackshaw. September 23, 1924.
240,315. Disperse systems, Process of making. O. Y. Imray. (*Soc. of Chemical Industry in Basle.*) November 3, 1924.
240,318. Water soluble condensation products, Manufacture of. O. Y. Imray. (*Farbwerke vorm. Meister, Lucius, und Brüning.*) November 8, 1924.
240,339. Hydrocarbons, Methods for treating. W. M. Cross. December 24, 1924.
240,350. Drying gases for the synthesis of ammonia. Synthetic Ammonia and Nitrates, Ltd., R. E. Slade, and V. E. Parke. January 28, 1925.
240,355. Oil-cracking stills. W. J. Mellersh Jackson. (*Sinclair Refining Co.*) February 16, 1925.
240,371. Nucleal condensation products from α-naphthol and cyanuric halides, Manufacture of. Soc. of Chemical Industry in Basle, H. Fritzsche, and P. Schaedeli. March 20, 1925. Addition to 220,302.

Applications for Patents

Badische Anilin- and Soda-Fabrik, and Johnson, J. Y. Manufacture of condensation products and dyestuffs of the benzanthrone series. 25,018. October 7.
Badische Anilin- and Soda-Fabrik, and Johnson, J. Y. Manufacture of isodibenzanthrones. 25,236. October 9.
Badische Anilin- and Soda-Fabrik, and Johnson, J. Y. Blast furnaces, producers, etc. 25,321. October 10.
Badische Anilin- and Soda-Fabrik, and Johnson, J. Y. Manufacture of vat colouring-matters. 25,322. October 10.
British Alizarine Co., Ltd., Dawson, W. H., and Soutar, C. W. Dyeing acetyl silk. 25,053. October 8.
Carpmael, W., and Farbenfabriken vorm. F. Bayer and Co. Manufacture of azo dyestuffs. 24,781. October 5.
Davidson, T. M. Distillation of carbonaceous substances. 23,814. October 5.
Dewar, W. Metallurgical treatment of copper ores, etc. 24,928. October 6.
Dreyfus, H. Treatment of cellulosic materials, etc. 24,867. October 6.
Dreyfus, H. Manufacture of cellulose derivatives. 24,868. October 6.
Ellis, G. B., and Soc. of Chemical Industry in Basle. Manufacture of vat dyestuffs. 24,894. October 9.
Gouldbourn, S. C. Purification of vegetable or animal materials, etc. 25,175. October 8.
Harter, H. Catalytic synthesis of ammonia. 25,029. October 7.
Levy, L. A. Manufacture of cellulose acetate. 25,161. October 8.
Parkes, D. W. Removal of tar acids from ammonia liquor, etc. 25,288. October 9.
Patart, G. Synthetic manufacture of liquefied ammonia. 24,782. October 5. (France, October 6, 1924.)
Patent Retorts, Ltd. Distillation of carbonaceous substances. 24,814. October 5.
Soc. of Chemical Industry in Basle. Manufacture of physiologically-active substances from internal organs. 25,015. October 7. (Switzerland, December 5, 1924.)
Vulcan Detinning Co. Separation and recovery of arsenic, tin, etc. 25,234. October 9. (United States, May 6.)

New Standard Specification for Cement

A NEW British standard specification for Portland cement is published this month by the British Engineering Standards Association. The specification was last revised in 1920. Since then it has been found desirable to make certain changes to bring it more into line with present-day requirements and to meet prevailing conditions of manufacture and testing in hot climates, and the new specification has been brought nearer to that of Blue Circle cement, the highest specification of cements in general use. Features of the new specification are: The cement is now required to be more finely ground, the permissible residue on a 180 by 180 sieve being 10 per cent., instead of 14 per cent. Tolerances are laid down for the number and size of wires and size of openings in sieves, both for cement and for sand. The minimum sizing of the sieve area is now specified to be 50 square inches (322·58 sq. cm.) and the minimum depth of the sieves to be 2¾ in. (68·85 mm.). The minimum tensile breaking strength of neat cement after seven days has been increased to 600 lb. per sq. in. (42·18 kg. per sq. cm.), and that of cement and sand after seven days to 325 lb. per sq. in. (22·85 kg. per sq. cm.). The 28-day test on neat cement has been eliminated. The initial setting time of normal setting cement is to be not less than 30 minutes, and the initial setting time of quick setting cement not less than 5 minutes.

Modern Gas Production

MR. ROBERT GRAY, of Hamilton, in his presidential address to the members of the Western District, Scottish Junior Gas Association, on Monday, at Glasgow, said that industries were crying out for cheap power in order to compete with foreign markets, and yet there was constantly being wasted more power than could be utilised. Of the 90 million tons of coal consumed annually by industries only a very small percentage was given up in the form of heat or power. Out of every ton of coal entering an electric station less than four cwt. were converted into energy, with the result that the remaining 16 cwt. were wasted. The gas industry, on the other hand, not only provided light, heat, and power for domestic and industrial purposes, but it also produced coke, ammonium sulphate for agriculture purposes and tar for road-making, and the manufacture of numerous chemical products, including dyes. He believed that of the total coal consumption of Britain the gas industry could claim to treat its portion more scientifically and at the same time more efficiently than any other consumer. Everything pointed to a state of progression. The industry had not entered upon the downward path, but was making towards a continued prosperity.

Hydrocarbon Oils as Insulating Media

THE first meeting of the Manchester Section of the Society of Chemical Industry for the session 1925-1926 was held at the Textile Institute, Dr. E. F. Armstrong presiding.

The newly-elected Chairman, Mr. L. Guy Radcliffe, M.Sc., F.I.C., gave an address entitled "Some Lesser Known Properties of Hydrocarbon Oils used as Insulating Media," in which he described researches conducted over a number of years which had for their object the determination of the stability of mineral oils used in electrical switches and transformers for insulating purposes. He pointed out that such oils were liable to undergo oxidation in the presence of air, and that this was facilitated by the immersion in them of copper and similar metals. This oxidation showed itself in the production of acid and a solid deposit, and a greatly reduced insulating value. Reference was made to the difficulty of obtaining exact chemical data to follow these changes, and the published results of researches carried out by the Institution of Electrical Engineers were referred to. Mr. Radcliffe also gave details of many experiments to discover a quick test whereby the durability of insulating oils could be predicted.

Important Lectures on Dyestuffs

THE Worshipful Company of Dyers announces a course of lectures to be given at Dyers' Hall, Dowgate Hill, London, E.C.4, as follows: Thursday, October 22, "How Dyes are Made," Sir Max Muspratt. Thursday, November 19, "The Patent Law as it Affects the Dyemaking and Dye-using Industries," Dr. Ernest F. Ehrhardt. Monday, December 14, "Recent Researches on Mordant Dyes," Professor Gilbert T. Morgan. Monday, January 11, 1926, "Artificial Silk Dyeing," Mr. C. M. Whittaker, of Courtlands, Ltd. Monday, February 15, "Vat Dyes and Some Recent Developments," Mr. R. Fraser Thomson, of Scottish Dyes, Ltd. Thursday, March 25, "The Dyestuff Industry and the State," Dr. Herbert Levinstein.

Each lecture is at 6 o'clock. Admission is free, but by ticket only, on application to the Clerk, Dyers' Hall, Dowgate Hill, London, E.C.4.

Research Chemist Killed by Explosion

DR. W. R. A. JOYNER, research chemist at the Nobel Explosive Factory, Ardeer, Ayrshire, died on Thursday, October 8, in Glasgow Western Infirmary, from terrible injuries received the previous day. He was experimenting with explosives when a container, which he was holding, exploded. His hands were blown off, and he sustained other shocking bodily injuries. He had been previously involved in an explosion while making a similar experiment.

Dr. Joyner was under 40 years of age, and leaves a widow and three children. He was a graduate of Bristol University, and specialised in physical chemistry. He was an M.Sc. of Brisbane, an Associate of the Institute of Chemistry, and he had been on Nobel's staff for 13 years.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, October 16, 1925.

THERE has been more activity during the past week. Next year's prices for some of the staple chemicals have been fixed by the makers and a large number of contracts been entered into. Generally speaking the demand for chemicals is improving and prices are firm.

There is a little more inquiry for export, but the volume of business is most disappointing.

General Chemicals

ACETONE is in good demand, price is very firm. Any change seems likely to be in an upward direction. Price to-day, £75 to £76 per ton.

ACID ACETIC is in fair demand. Technical is £37 to £38 per ton; pure £38 10s. to £40 per ton for 80% grades.

ACID FORMIC is quiet and without special feature.

ACID LACTIC is in fair demand at £43 per ton for 50% by weight.

ACID OXALIC is weaker consequent upon second-hand offering Price 3½d. to 3⅝d. per lb.

ALUMINA SULPHATE.—Steady business is passing, price about £6 2s. 6d. per ton.

AMMONIUM CHLORIDE is featureless.

ARSENIC.—The unsatisfactory state of the market continues and there are no reliable price indications.

BARIUM CHLORIDE is again somewhat easier at about £8 10s. per ton.

BLEACHING POWDER.—The makers' price for next year has been fixed at £8 10s. per ton.

EPSOM SALTS are firm at £5 to £5 10s. per ton.

FORMALDEHYDE is very scarce for early delivery, spot supplies commanding £42 to £43 per ton.

LEAD ACETATE is in fair demand. Price £46 per ton for white and £45 to £46 per ton for brown.

LIME ACETATE.—Little business is passing, price nominally £15 per ton for grey basis 80%.

LITHOPONE is quiet at about £20 per ton.

POTASSIUM CAUSTIC AND CARBONATE are unchanged.

POTASSIUM CHLORATE is still very scarce, spot supplies commanding 4¼d. per lb.

POTASSIUM PERMANGANATE.—The demand is very small and stocks are offered at about 7¾d. per lb.

POTASSIUM PRUSSIATE.—The market is very firm with increased demand, price, 7½d. per lb.

SODA ACETATE is very quiet at £17 10s. per ton.

SODA BICHROMATE.—The English makers' prices for both home trade and export for next year have been notified. For home trade the prices are: Soda 3½d. per lb.; Potash, 4½d. per lb., both less 5 per cent. discount for 5-ton contracts and upwards.

SODA CAUSTIC.—English makers' prices for next year are now available.

SODA NITRITE is very quiet at £22 10s. per ton.

SODA PRUSSIATE has been in active demand for export and the price is firm at 4½d. per lb.

SODIUM SULPHIDE is very weak, lower prices are expected.

ZINC SULPHATE.—Unchanged.

Coal Tar Products

The general tone of the market for coal tar products is firm, with the possible exception of Pitch.

90% BENZOL remains unchanged at 1s. 8d. per gallon on rails.

PURE BENZOL is quoted at 1s. 11d. to 2s. per gallon on rails.

CREOSOTE OIL is firm, and somewhat scarce for the near position. It is quoted at 6d. per gallon on rails in the North, while the price in the South is 7d. to 7¼d. per gallon.

CRESYLIC ACID is firm at 1s. 6d. to 1s. 7d. per gallon on rails for the pale quality 97/99%, while the dark quality 95/97% is worth about 1s. 1d. to 1s. 2d. per gallon on rails.

SOLVENT NAPHTHA is in no great demand, and is quoted at 1s. 4½d. per gallon on rails.

HEAVY NAPHTHA can be bought at 1s. 1d. per gallon on rails.

NAPHTHALENES are slightly improved, the lower grades being in fair demand, for seasonable requirements, and are quoted at about £4 per ton, while the 76/78 quality is worth about £6 per ton, and the 74/76 quality at about £5 10s. per ton.

PITCH is in fairly good demand, and prices are well maintained.

Latest Oil Prices

LONDON.—LINSEED OIL quiet and 5s. to 10s. lower. Spot £40 5s.; October to December, £38 17s. 6d.; January-April, £38 15s. RAPE OIL dull and 20s. down; crude crushed, spot, £47 10s.; technical refined, £51 10s. COTTON OIL steady. Refined common edible, £46 10s.; Egyptian crude, £40 10s.; deodorised, £48 10s. TURPENTINE quiet. American spot, 76s. 9d.; November-December, 77s. 9d., and January-April, 79s. 9d. per cwt.

HULL.—LINSEED.—Naked, spot, £39 10s.; October, £39 5s.; November-December and January-April, £39. COTTON OIL.—Naked, Bombay crude, £38; Egyptian crude (new), £42; ditto (old), £40; edible refined, £43 10s.; technical, £41 15s. PALM KERNEL OIL.—Crushed naked, 5½ per cent., £43. GROUNDNUT OIL.—Crushed extracted, £48; deodorised, £52. SOYA OIL.—Extracted and crushed, £41 10s.; deodorised, £45. RAPE OIL.—Extracted, £46 10s. per ton net, cash terms, ex-mill. CASTOR OIL COD and OIL unaltered.

Nitrogen Products Market

Export.—Since our last report, the export market has remained very firm with an upward tendency.

Home.—There is no change to report in the position, either with regard to demand or price.

Nitrate of Soda.—The tone of the nitrate market remains very firm with prompt values at £11 10s. per ton, c.i.f. European ports.

American Market Movements

(From *Drug and Chemical Markets.*)

INDUSTRIAL chemicals slightly less active, but very firm. Potassium carbonate easier. Formic acid off slightly. Sodium prussiate unsettled. Heavy buying of barium chloride. Benzene steady. Solvent naphtha and xylenes in very tight positions. Pyridine lower. Ortho-toluidine offered by a manufacturer at recent sharp break. Para-toluidine very weak. Other intermediates fairly steady.

Steady improvement is shown throughout the fine chemical market. Prices are steadier, but few changes are noted.

Synthetic Camphor on the Market

WE have just received two samples of synthetic camphor, in the technical and pure qualities, from A. and M. Zimmermann, Ltd., of 3, Lloyds Avenue, E.C.3, who are the London agents for E. Shering, chemical manufacturers, of Berlin. The synthetic product is now on the market, and it is claimed that it is equivalent in its chemical applications to natural camphor, which is, of course, obtained from a species of laurel that is largely cultivated in Japan. Although artificial camphor is reported to have been produced for some while in France, we understand from inquiries that it has not yet been manufactured in this country.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

Acid Acetic, 40% Tech.—£20 per ton.
Acid Boric, Commercial.—Crystal, £40 per ton, Powder, £42 per ton.
Acid Hydrochloric.—3s. 9d. to 6s. per carboy d/d, according to purity, strength and locality.
Acid Nitric, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
Acid Sulphuric.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
Ammonia Alkali.—£6 15s. per ton f.o.r. Special terms for contracts.
Bleaching Powder.—Spot, £10 10s. d/d; Contract, £9 10s. d/d, 4 ton lots.
Bisulphite of Lime.—£7 10s. per ton, packages extra, returnable.
Borax, Commercial.—Crystal, £25 per ton. Powder, £26 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)
Calcium Chlorate (Solid).—£5 12s. 6d. to £5 17s. 6d. per ton d/d, carriage paid.
Copper Sulphate.—£25 to £25 10s. per ton.
Methylated Spirit 64 O.P.—Industrial, 2s. 5d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.
Nickel Sulphate.—£38 per ton d/d.
Nickel Ammonia Sulphate.—£38 per ton d/d.
Potash Caustic.—£30 to £33 per ton.
Potassium Bichromate.—5d. per lb.
Potassium Chlorate.—3¾d. per lb., ex wharf, London, in cwt. kegs.
Salammoniac.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton. Carr. pd.
Salt Cake.—£3 15s. to £4 per ton d/d. In bulk.
Soda Caustic, Solid.—Spot lots delivered, £15 12s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
Soda Crystals.—£5 to £5 5s. per ton ex railway depots or ports.
Sodium Acetate 97/98%.—£21 per ton.
Sodium Bicarbonate.—£10 10s. per ton, carr. paid.
Sodium Bichromate.—4d. per lb.
Sodium Bisulphite Powder 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.
Sodium Chlorate.—3d. per lb.
Sodium Nitrate refined 96%.—£13 5s. to £13 10s. per ton, ex Liverpool.
Sodium Nitrite 100% basis.—£27 per ton d/d.
Sodium Phosphate, £14 per ton, f.o.r. London, casks free.
Sodium Sulphate (Glauber Salts).—£3 12s. 6d. per ton.
Sodium Sulphide conc. solid. 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. pd.
Sodium Sulphide Crystals.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. pd.
Sodium Sulphite, Pea Crystals.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

Acid Carbolic Crystals.—4¾d. per lb. Crude 60's, 1s. 3d. to 1s. 4d. Rather more inquiry.
Acid Cresylic 97/99.—1s. 5½d. to 1s. 6d. per gall. Steady, with more inquiry. Pale, 95%, 1s. 5d. per gall. Dark, 1s. 3d. to 1s. 6d. per gall.
Anthracene Paste 40%.—3d. per unit per cwt.—Nominal price. No business.
Anthracene Oil, Strained.—8d. to 8½d. per gall. Good inquiry. Unstrained, 7d. to 7½d. per gall.
Benzol.—Crude 65's.—11d. to 1s. 3d. per gall., ex works in tank wagons. Standard Motor, 1s. 8d. to 1s. 10d. per gall., ex works in tank wagons. Pure, 1s. 11d. to 2s. 3d. per gall., ex works in tank wagons. Firm.
Toluol.—90%, 1s. 9d. per gall. More inquiry. Pure, 1s. 11d. to 2s. 2d. per gall.
Xylol Commercial.—1s. 11d. per gall. Pure, 2s. per gall.
Creosote.—Cresylic, 20/24%, 8d. per gall. Market very quiet. Standard specification, 6d. to 7d. per gall.; middle oil, heavy, 5¾d. to 6d. per gall. Market steady.
Naphtha.—Solvent 90/160, 1s. 4d. to 1s. 6d. per gall. Fair business. Solvent 90/190, 1s. to 1s. 1d. per gall. Moderate demand.
Naphthalene Crude.—Drained Creosote Salts, £3 15s. to £5 per ton Whizzed or hot pressed, £4. Better inquiry.
Naphthalene.—Crystals and Flaked, £12 to £13 per ton, according to districts.
Pitch.—Medium soft, 41s. to 42s. 6d. per ton, according to district. Moderate demand.
Pyridine.—90/160, 17s. 6d. to 19s. 9d. per gall. Weaker. Heavy, 11s. to 11s. 6d. per gall. Market quiet.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated.

Acetic Anhydride 95%.—1s. 7d. per lb.
Acid Amidonaphthol disulpho (1-8-2-4).—10s. 9d. per lb.
Acid Anthranilic.—7s. per lb. 100%.
Acid Benzoic.—1s. 9d. per lb.
Acid Gamma.—9s. per lb.
Acid H.—3s. 6d. per lb. 100% basis d/d.
Acid Naphthionic.—2s. 2d. per lb. 100% basis d/d.
Acid Neville and Winther.—4s. 10d. per lb. 100% basis d/d.
Acid Sulphanilic.—9d. per lb. 100% basis d/d.
Aluminium Chloride, anhydrous.—10d. per lb. d/d.
Aniline Oil.—7d. per lb. naked at works.
Aniline Salts.—7d. per lb. naked at works.
Antimony Pentachloride.—1s. per lb. d/d.
Benzaldehyde.—2s. 1½d. per lb. Good home inquiry.
Benzidine Base.—3s. 6d. per lb. 100% basis d/d.
Benzyl Chloride 95%.—1s. 1d. per lb.
p-Chlorphenol.—4s. 3d. per lb. d/d.
p-Chloraniline.—3s. per lb. 100% basis.
o-Cresol 29/31° C.—3d. per lb. Demand quiet.
m-Cresol 98/100%.—2s. 1d. per lb. Demand moderate.
p-Cresol 32/34° C.—2s. 1d. per lb. Demand moderate.
Dichloraniline.—2s. 3d. per lb.
Dichloraniline S. Acid.—2s. 3d. per lb. 100% basis.
Diethylaniline.—4s. 3d. per lb. d/d., packages extra, returnable.
Dimethylaniline.—2s. per lb. d/d. Drums extra.
Dinitrobenzene.—9d. per lb. naked at works.
Dinitrochlorbenzene.—£84 10s. per ton d/d.
Dinitrotoluene.—48/50° C. 8d. to 9d. per lb. naked at works. 66/68° C. 1s. per lb. naked at works.
Diphenylaniline.—2s. 10d. per lb. d/d.
G. Salt.—2s. 2d. per lb. 100% basis d/d.
a-Naphthol.—1s. 10d. per lb. d/d. Fair home inquiry.
B-Naphthol.—1s. per lb. d/d. Fair home inquiry.
a-Naphthylamine.—1s. 3d. per lb. d/d. Fair home inquiry.
B-Naphthylamine.—3s. 9d. per lb. d/d. Fair home inquiry.
m-Nitraniline.—3s. 9d. per lb. d/d.
p-Nitraniline.—1s. 11d. per lb. d/d. Fair home inquiry.
Nitrobenzene.—5d. per lb. naked at works. Good home inquiry.
o-Nitrochlorbenzol.—2s. 3d. per lb. 100% basis d/d.
Nitronaphthalene.—10d. per lb. d/d.
p-Nitrophenol.—1s. 9d. per lb. 100% basis d/d.
p-Nitro-*o*-amido-phenol.—4s. 6d. per lb. 100% basis.
m-Phenylene Diamine.—4s. per lb. d/d.
p-Phenylene Diamine.—9s. 9d. per lb. 100% basis d/d.
R. Salt.—2s. 4d. per lb. 100% basis d/d.
Sodium Naphthionate.—1s. 8d. per lb. 100% basis d/d.
o-Toluidine.—8d. per lb. Good home inquiry.
p-Toluidine.—2s. 3d. per lb. naked at works.
m-Toluylene Diamine.—4s. per lb. d/d.

Wood Distillation Products

Acetate of Lime.—Brown £8. Quiet market. Grey, £14 10s. per ton. Liquor, 9d. per gall. 32° Tw.
Acetone.—£73 per ton.
Charcoal.—£7 to £9 per ton, according to grade and locality. Demand fair.
Iron Liquor.—1s. 7d. per gall. 32° Tw. 1s. 2d. per gall, 24° Tw.
Red Liquor.—10d. to 1s. per gall. 15° Tw.
Wood Creosote.—2s. 7d. per gall. Unrefined.
Wood Naphtha, Miscible.—5s. per gall.
60% O.P. Solvent, 4s. 6d. per gall. 40% O.P. Very quiet.
Wood Tar.—£3 15s. to £5 per ton, according to grade.
Brown Sugar of Lead.—£40 per ton.

Rubber Chemicals

Antimony Sulphide.—Golden, 7¼d. to 1s. 5d. per lb., according to quality, Crimson, 1s. 5d. to 1s. 7½d. per lb., according to quality.
Arsenic Sulphide, Yellow.—2s. per lb.
Barytes.—£3 10s. to £6 15s. per ton, according to quality.
Cadmium Sulphide.—4s. 4d. per lb.
Carbon Bisulphide.—£25 to £28 per ton, according to quantity.
Carbon Black.—5½d. per lb., ex wharf.
Carbon Tetrachloride.—£55 to £60 per ton, according to quantity, drums extra.
Chromium Oxide, Green.—1s. 3d. per lb.
Diphenylguanidine, 4s. to 4s. 3d. per lb.
Indiarubber Substitutes, White and Dark.—5¾d. to 6¾d. per lb.
Lamp Black.—£43 per ton, barrels free.
Lead Hyposulphite.—9d. per lb.
Lithopone, 30%.—£22 10s. per ton.
Mineral Rubber "Rubpron."—£13 12s. 6d. per ton f.o.r. London.
Sulphur.—£9 to £11 per ton, according to quality

Sulphur Chloride.—4d. per lb., carboys extra.
Sulphur Precip. B.P.—£50 to £55 per ton.
Thiocarbamide.—2s. 6d. to 2s. 9d. per lb.
Thiocarbanilide.—2s. 1d. to 2s. 3d. per lb.
Vermilion, Pale or Deep.—5s. per lb.
Zinc Sulphide.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

Acid, Acetic, 80 % B.P.—£39 per ton ex wharf London in glass containers.
Acid, Acetyl Salicylic.—2s. 6½d. to 2s. 8d. per lb. Keen competition continuing. Good demand.
Acid, Benzoic B.P.—2s. to 2s. 3d. per lb., according to quantity.
Acid, Boric B.P.—Crystal £46 per ton, Powder £50 per ton. Carriage paid any station in Great Britain.
Acid, Camphoric.—19s. to 21s. per lb.
Acid, Citric.—1s. 4d. per lb., less 5%. Unsettled.
Acid, Gallic.—2s. 9d. per lb. for pure crystal, in cwt. lots.
Acid, Pyrogallic, Crystals.—5s. 4d. to 5s. 6d. per lb.
Acid, Salicylic.—1s. 4d. to 1s. 6d. per lb. Technical.—10½d. to 11d. per lb.
Acid, Tannic B.P.—2s. 8d. per lb.
Acid, Tartaric.—1s. 0½d. per lb., less 5%. Market firm.
Amidol.—6s. 6d. per lb., d/d.
Acetanilide.—1s. 5d. per lb. for quantities.
Amidopyrin.—12s. 9d. per lb.
Ammonium Benzoate.—3s. 3d. to 3s. 6d. per lb., according to quantity.
Ammonium Carbonate B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.
Atropine Sulphate.—11s. 6d. per oz. for English make.
Barbitone.—10s. 3d. to 10s. 6d. per lb.
Benzonaphthol.—3s. 3d. per lb. spot.
Bismuth Carbonate.—12s. 9d. to 14s. 9d. per lb.
Bismuth Citrate.—11s. 4d. to 13s. 4d. per lb.
Bismuth Salicylate.—10s. 2d. to 12s. 2d. per lb.
Bismuth Subnitrate.—10s. 9d. to 12s. 9d. per lb. according to quantity.
Borax B.P.—Crystal £29, Powder £30 per ton. Carriage paid any station in Great Britain.
Bromides.—Potassium, 1s. 10d. to 2s. per lb.; sodium, 2s. 1d. to 2s. 3d. per lb.; ammonium, 2s. 5d. to 2s. 7d. per lb., all spot. British or Imported. Firm.
Calcium Lactate.—1s. 4d. to 1s. 6d. B.P. 2s. 8d. to 3s., according to quantity.
Chloral Hydrate.—3s. 5d. to 3s. 6d. per lb., duty paid.
Chloroform.—2s. 5½d. to 2s. 7½d. per lb., according to quantity.
Creosote Carbonate.—6s. per lb.
Formaldehyde.—£41 per ton, in barrels ex wharf.
Glycerophosphates.—Fair business passing. Calcium, soluble and citrate free, 7s. per lb.; iron, 8s. 9d. per lb.; magnesium, 9s. per lb.; potassium, 50%, 3s. 6d. per lb.; sodium, 60%, 2s. 6d. per lb.
Guaiacol Carbonate.—6s. to 7s. per lb.
Hexamine.—2s. 5d. per lb.
Homatropine Hydrobromide.—30s. per oz.
Hydrastine Hydrochloride.—English make offered at 120s. per oz.
Hydrogen Peroxide (12 vols.).—1s. 8d. per gallon f.o.r. makers' works, naked.
Hydroquinone.—4s. 4½d. per lb., in cwt. lots.
Hypophosphites.—Calcium, 3s. 6d. per lb., for 28 lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
Iron Ammonium Citrate B.P.—1s. 8d. to 1s. 11d. per lb. Green, 2s. 2d. to 2s. 7d. per lb. U.S.P., 1s. 7d. to 1s. 10d. per lb.
Magnesium Carbonate.—Light Commercial, £33 per ton net.
Magnesium Oxide.—Light Commercial, £70 per ton, less 2½%, price reduced; Heavy Commercial, reduced to £23 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.
Menthol.—A.B.R. recrystallised B.P., 46s. net per lb., October delivery. Synthetic, 22s. 6d. to 27s. 6d. per lb., according to quality. English make.
Mercurials.—Red oxide, 5s. 2d. to 5s. 4d. per lb.; Corrosive sublimate, 3s. 7d. to 3s. 9d. per lb; white precipitate, 4s. 6d. to 4s. 8d. per lb.; Calomel, 3s. 10d. to 4s. per lb. Still quiet.
Methyl Salicylate.—1s. 8d. per lb. Demand increasing, price firmer.
Methyl Sulphonal.—17s. 6d. per lb.
Metol.—9s. per lb. British make.
Paraformaldehyde.—1s. 9d. for B.P. quality.
Paraldehyde.—1s. 4½d. per lb., in free bottles and cases.
Phenacetin.—4s. to 4s. 3d. per lb.
Phenazone.—6s. to 6s. 3d. per lb. Spot lower than forward price.
Phenolphthalein.—4s. to 4s. 3d. per lb. Supply exceeds demand.
Potassium Bitartrate 99/100% (Cream of Tartar).—80s. per cwt., less 2½% for ton lots. Market very firm.
Potassium Citrate.—1s. 7d. to 1s. 10d. per lb.
Potassium Ferricyanide.—1s. 8d. to 1s. 9d. per lb. Quiet.
Potassium Iodide.—16s. 8d. to 17s. 5d. per lb., according to quantity. Steady market.
Potassium Metabisulphite.—6d. to 7½d. per lb., 1-cwt. kegs included, f.o.r. London.
Potassium Permanganate.—B.P. crystals, 8d. per lb., spot. Firmer.
Quinine Sulphate.—2s. 3d. to 2s. 4d. per oz., in 100 oz. tins. Steady market.
Resorcin.—3s. 10½d. per lb. In fair quantities.
Saccharin.—63s. per lb. in 50 lb. lots.
Salol.—3s. 3d. to 3s. 6d. per lb.
Silver Proteinate.—12s. per lb. for satisfactory product light in colour.
Sodium Benzoate, B.P.—1s. 10d. to 2s. 2d. per lb.
Sodium Citrate, B.P.C., 1911.—1s. 4d. to 1s. 7d. per lb., B.P.C., 1923. 1s. 7d. to 1s. 10d. per lb., according to quantity.
Sodium Hyposulphite, Photographic.—£14 to £15 per ton, according to quantity, d/d consignee's station in 1-cwt. kegs.
Sodium Metabisulphite Crystals.—37s. 6d. to 60s. per cwt., net cash, according to quantity.
Sodium Nitroprusside.—16s. per lb.
Sodium Potassium Tartrate (Rochelle Salt).—75s. to 80s. per cwt., according to quantity.
Sodium Salicylate.—Powder, 2s. 1d. per lb. Crystal, 2s. to 2s. 1d. per lb. Flake, 2s. 2d. per lb.
Sodium Sulphide, pure recrystallised.—10d. to 1s. 2d. per lb.
Sodium Sulphite, anhydrous, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.
Sulphonal.—12s. per lb. Limited demand.
Thymol.—13s. to 15s. per lb.

Perfumery Chemicals

Acetophenone.—9s. per lb.
Aubepine (ex Anethol).—11s. per lb.
Amyl Acetate.—3s. per lb.
Amyl Butyrate.—6s. 6d. per lb.
Amyl Salicylate.—3s. 1½d. per lb.
Anethol (M.P. 21/22° C.).—6s. 6d. per lb.
Benzyl Acetate from Chlorine-free Benzyl Alcohol.—2s. 4d. per lb.
Benzyl Alcohol free from Chlorine.—2s. 4d. per lb.
Benzaldehyde free from Chlorine.—2s. 9d. per lb.
Benzyl Benzoate.—2s. 9d. per lb.
Cinnamic Aldehyde Natural.—15s. 6d. per lb.
Coumarin.—13s. per lb.
Citronellol.—16s. per lb.
Citral.—10s. per lb.
Ethyl Cinnamate.—9s. per lb.
Ethyl Phthalate.—3s. per lb.
Eugenol.—9s. 6d. per lb.
Geraniol (Palmarosa).—23s. 6d. per lb.
Geraniol.—8s. to 16s. per lb.
Heliotropine.—6s. 3d. per lb.
Iso Eugenol.—14s. 6d. per lb.
Linalol ex Bois de Rose.—22s. per lb.
Linalyl Acetate.—20s. per lb.
Methyl Anthranilate.—9s. 3d. per lb.
Methyl Benzoate.—5s. per lb.
Musk Ketone.—40s. 6d. per lb.
Musk Xylol.—6s. per lb.
Nerolin.—4s. per lb.
Phenyl Ethyl Acetate.—14s. per lb.
Phenyl Ethyl Alcohol.—11s. 6d. per lb.
Rhodinol.—36s. 6d. per lb.
Safrol.—1s. 4d. per lb.
Terpineol.—1s. 8d. per lb.
Vanillin.—22s. 9d. per lb.

Essential Oils

Almond Oil.—12s. 6d. per lb.
Anise Oil.—3s. 5d. per lb.
Bergamot Oil.—27s. 6d. per lb.
Bourbon Geranium Oil.—16s. per lb.
Camphor Oil.—60s. per cwt.
Cananga Oil, Java.—11s. 3d. per lb.
Cinnamon Oil, Leaf.—5d. per oz.
Cassia Oil, 80/85%.—10s. 3d. per lb.
Citronella Oil.—Java, 85/90%, 3s. 7d.; Ceylon, 2s. 6d. per lb.
Clove Oil.—7s. 6d. per lb.
Eucalyptus Oil, 70/75%.—1s. 10d. per lb.
Lavender Oil.—French 38/40% Esters, 32s. per lb.
Lemon Oil.—6s. 9d. per lb.
Lemongrass Oil.—4s. 9d. per lb.
Orange Oil, Sweet.—10s. 9d. per lb.
Otto of Rose Oil.—Bulgarian, 60s. per oz. Anatolian, 35s. per oz.
Palma Rosa Oil.—13s. 9d. per lb.
Palma Rose Oil.—15s. 3d. per lb.
Peppermint Oil.—Wayne County. 75s. for shipment from U.S.A. Japanese, 28s. 9d. per lb. Much firmer.
Petitgrain Oil.—9d. per lb.
Sandal Wood Oil.—Mysore, 26s. per lb. Australian, 18s. 6d. per lb.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, October 16, 1925.

BUSINESS in the heavy chemical market remains steady, and although quantities called for are not large, fair inquiry has been maintained. One or two important changes in prices fall to be recorded, viz., a reduction of £1 per ton in the contract price of bleaching powder and ½d. per lb. on bichromate of soda and potash. British manufacturers also advise a reduction of 10s. per ton in the price of caustic soda for next year.

Industrial Chemicals

ACID ACETIC.—In usual steady demand. 98/100% quoted £55 to £67 per ton, according to quality and packing, c.i.f., U.K. ports. 80% pure, £40-£42 per ton. 80% technical, £38 to £40 per ton, packed in casks, c.i.f. U.K. ports.

ACID BORIC.—Crystal, granulated, or small flaked, £40 per ton Powdered £42 per ton, packed in bags carriage paid U.K. stations.

ACID CARBOLIC ICE CRYSTALS.—In moderate demand, and price unchanged at about 4¾d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC B.P. CRYSTALS.—In fair demand. Price nominally 1s. 3d. per lb. less 5% ex store, but could probably be obtained for less.

ACID FORMIC 85%.—Quoted £46 per ton, ex wharf. Prompt shipment from the continent.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC 80°.—Remains unchanged at £23 5s. per ton, ex station, full truck loads.

ACID OXALIC 98/100%.—Rather cheaper offers from the continent. Now quoted 3⅜d. per lb., c.i.f. U.K. ports, duty paid. Spot material quoted 3½d. per lb., ex wharf.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Offered for early delivery at 11½d. per lb., less 5%, ex wharf. A fraction more asked for sport material.

ALUMINA SULPHATE 17/18%, IRON FREE.—Quoted £6 15s. per ton, ex store, spot delivery. Offered for prompt shipment from the continent at £6 5s. per ton, c.i.f. U.K. ports.

ALUM, LUMP POTASH.—Spot material unchanged at £9 5s. per ton, ex store. Offered for early shipment from the continent at about £8 per ton, c.i.f. U.K. ports.

AMMONIA ANHYDROUS.—In moderate demand and price unchanged at 1s. 4½d. per lb., less 5%, ex station. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton. Powdered, £39 per ton. Packed in 5 cwt. casks, delivered U.K. ports.

AMMONIA LIQUID, 880°.—In usual steady demand and price unchanged at 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers crystals now quoted £27 10s. per ton, ex station. Offered from the continent at about £23 5s. per ton, c.i.f. U.K. ports. Fine white crystals quoted £19 5s. per ton, c.i.f. U.K. ports.

ARSENIC.—Refined white Cornish arsenic nominally £20 per ton ex wharf, early delivery, but this price could probably be shaded for reasonably large parcels. Spot material available at about £22 10s. per ton, ex store.

BARIUM CHLORIDE.—Large crystals now offered on spot at about £9 5s. per ton, ex store. Fine white crystals on offer from the Continent at about £7 5s. per ton c.i.f. U.K. ports.

BLEACHING POWDER.—English manufacturers advise reduction of £1 per ton on contracts from date until the end of 1926. Spot material £9 10s. per ton; contracts 20s. per ton less. Continental bleaching powder now quoted £8 2s. 6d. per ton c.i.f. U.K. ports.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton c.i.f. U.K. ports.

BORAX.—Granulated £24 10s. per ton. Crystals £25 per ton. Powdered £26 per ton. Carriage paid U.K. stations.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton carriage paid U.K. stations. Continental rather cheaper at about £3 15s. per ton c.i.f. U.K. ports.

COPPERAS GREEN.—In good demand for export. Prices unchanged at about £3 7s. 6d. per ton f.o.b. U.K. ports, packed in casks.

COPPER SULPHATE.—Spot material available at about £23 10s. per ton, ex wharf. English for export quoted £24 10s. per ton f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Quoted £39 15s. per ton c.i.f. U.K. ports, prompt shipment. Spot material available at £40 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 17s. 6d. per ton c.i.f. U.K. ports.

LEAD, RED.—Imported material rather easier at about £44 15s. per ton, ex store.

LEAD, WHITE.—Quoted £44 10s. per ton, ex store, spot delivery.

LEAD ACETATE, WHITE CRYSTALS.—Spot material quoted £45 per ton, ex store. Brown about £43 per ton, ex store. White crystals on offer from the Continent at £43 15s. per ton c.i.f. U.K. ports. Brown about £38 10s. per ton c.i.f. U.K. ports.

MAGNESITE, GROUND CALCINED.—In moderate demand and price unchanged at about £8 15s. per ton, ex station.

POTASH CAUSTIC 88/92%.—Syndicate prices unchanged at £27 10s. per ton c.i.f. U.K. ports. Spot material available at about £29 10s. per ton, ex store.

POTASSIUM BICHROMATE.—Makers advise reduction in price of ½d. per lb. Now 4½d. per lb. delivered.

POTASSIUM CARBONATE 96/98%.—On offer from the Continent at about £25 15s. per ton c.i.f. U.K. ports. Spot material available at £26 10s. per ton, ex store.

POTASSIUM CHLORATE, 98/100%.—Now quoted about £30 10s. per ton c.i.f. U.K. ports. Only small quantities available for immediate delivery.

POTASSIUM NITRATE, SALTPETRE.—99% refined granulated quoted £24 15s. per ton c.i.f. U.K. ports. Spot material available at about £27 5s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Spot material quoted 8d. per lb., ex store. Offered for early delivery at 7¾d. per lb., ex wharf.

POTASSIUM PRUSSIATE, YELLOW.—Good inquiry and price unchanged at about 7½d. per lb., ex store. Offered for early shipment from the Continent at about 7¼d. per lb., ex wharf.

SODA CAUSTIC 76/77%.—Manufacturers advise reduction in price of 10s. per ton. 76/77% now £17 10s. per ton. 70/72% £16 2s. 6d. per ton. Broken, 60% £16 12s. 6d. per ton. Powdered, 98/99% £20 17s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts, 20s. per ton less.

SODIUM ACETATE.—Spot material unchanged at about £18 15s. per ton, ex store. Quoted £18 per ton c.i.f. U.K. ports, prompt shipment from the Continent.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM CARBONATE, SODA CRYSTALS.—£5 to £5 5s. per ton ex quay or station. Powdered or pea quality, £1 7s. 6d. per ton more; alkali 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture unchanged at £9 10s. per ton, ex station. minimum ton lots. Pea crystals, £14 per ton, ex station. Continental commercial quality quoted £9 5s. per ton, ex store.

SODIUM NITRATE.—Quoted £13 per ton, ex store. 96/98% refined quality 7s. 6d. per ton extra.

SODIUM NITRITE, 100%.—Quoted £24 per ton, ex store. Offered from the Continent about £22 5s. per ton, c.i.f. U.K. ports.

SODIUM PRUSSIATE, YELLOW.—Spot lots quoted at 4d. per lb., ex store. Continental material quoted, ex wharf, at about the same figure.

SODIUM SULPHATE, SALTCAKE.—Price for home consumption, £3 10s. per ton, f.o.r. works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE.—English material. Solid 60/62% now £13 per ton; broken, £14 per ton; flake, £15 per ton; crystals, £8 10s. per ton. Carriage paid U.K. stations, minimum 4-ton lots with slight reductions for contracts to the end of the year, 60/62% solid offered from the Continent at £10 15s. per ton. c.i.f. U.K. ports; broken, £1 per ton more; 30/32% crystals, £7 15s. per ton, c.i.f. U.K. ports.

SULPHUR.—Flowers, £10 10s.; roll, £9 10s.; rock, £9 7s. 6d.; ground, £9 10s. per ton, ex store, spot delivery. Prices nominal.

ZINC CHLORIDE 98/100%.—On offer from the Continent at about £23 10s. per ton c.i.f. U.K. ports. 96/98% quality of English manufacture quoted about £23 10s. per ton f.o.b. U.K. ports.

ZINC SULPHATE.—Of Continental manufacture on offer at about £11 15s. per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable for small parcels.

Coal Tar Intermediates and Wood Distillation Products

PARA XYLIDINE HCL.—6s. 6d. per lb. Fair home inquiries.

H. ACID.—3s. 6d. per lb. Small home inquiries.

ALPHA NAPHTHOL.—2s. 3d. per lb. Small home inquiries.

BENZOIC ACID.—1s. 9d. per lb. Fair home inquiries.

Manchester Chemical Market

(From Our Own Correspondent).

Manchester, October 15, 1925.

Whilst prices of most of the heavy chemicals have kept fairly steady since last report, there are one or two items in which values seem to be moving more in favour of buyers. The demand for most of the staple lines of "heavies" continues on a quiet scale. The American cotton crop surprise has raised hopes of more business with textile users of chemicals, though the only effect up to now seems to be that the Lancashire cotton trade has been thrown into a state of uncertainty, if not confusion. Ultimately, however, if the estimates are borne out, the increased crop should stimulate the cotton trade and with it the consumption of heavy chemicals.

Heavy Chemicals

Chlorate of soda is in fair demand and is still on offer at 2¾d. per lb. Hyposulphite of soda is rather quiet at £14 10s. to £15 per ton for photographic crystals and £9 5s. to £9 10s. for commercial quality. Sodium sulphide is slow and easy; 60-65 per cent. concentrated solid is quoted at about £11 15s. per ton and commercial material at £9 5s. Bichromate of soda is currently quoted at 4d. per lb., but for contract deliveries over next year makers' prices have been fixed at 3½d. Saltcake continues to be a slow seller though values still range from £3 10s. to £3 12s. 6d. per ton. Glauber salts are inactive at £3 10s. per ton. Acetate of soda is rather dull and values are inclined to be easy at £17 10s. to £18 per ton. A fair trade is being done in caustic soda, and prices are steady at from £15 12s. 6d. per ton for 60 per cent. strength to £18 for 76-77 per cent. Soda crystals are maintained at £5 5s. per ton and a quietly steady demand is being met with. Alkali is selling in moderate quantities at £6 15s. per ton. Prussiate of soda is rather quiet, but values are unchanged at round 4d. per lb. Phosphate of soda is in small demand at about £12 10s. per ton. Bicarbonate of soda is quiet, but values keep up to their recent level of £10 10s. per ton.

Carbonate of potash is selling in moderate quantities and quotations are maintained at £25 to £25 10s. per ton. Caustic potash is in rather quiet demand at £28 to £29 per ton for 96-98 per cent. material. Permanganate of potash meets with a fair amount of inquiry at 7¾d. to 8d. per lb. for B.P. quality and round 5¾d. for commercial. Yellow prussiate of potash is steady though in limited request at 7¼d. per lb. Bichromate of potash is quiet at 5d. per lb., with a reduction of halfpenny per lb. announced on 1926 contract deliveries. Chlorate of potash is still quoted at round 4d. per lb., but the demand for this material is not particularly active.

The decline in the prices of arsenic steadily continues, but the lower figures fail to attract buyers of any importance; white powdered, Cornish makes, is quoted at about £16 10s. per ton, on rails. Sulphate of copper is in limited request at £24 to £24 10s. per ton. Epsom salts are unchanged from last week though the demand is on the quiet side; current value is £3 15s. per ton. Magnesium sulphate, pharmaceutical quality, is quoted at about £5 5s. per ton. Acetate of lead is in small demand at £44 to £45 for white and £39 for brown. Nitrate of lead is not attracting much attention, though prices are little changed from last week at £41 per ton. Sales of acetate of lime are slow, with values on the easy side; grey is on offer at about £14 10s., and brown at £7 10s. to £8.

Acids and Coal Tar Products

Citric acid is in quiet request with prices maintained at round 1s. 3d. per lb. Tartaric acid is rather slow at 11½d. to 11¾d. per lb. Oxalic acid keeps dull with values weak at 3½d. per lb. Acetic acid is steady and in moderate request at £37 to £38 per ton for 80 per cent. commercial and £66 10s. for glacial.

Among the coal-tar products carbolic acid is featureless and values are nominal, with crude quoted at 1s. 3d. to 1s. 4d. per gallon and crystal at 4½d. per lb. Creosote oil is fairly active and prices are firm at round 6d. per lb. Pitch is still quiet at about 40s. per ton. Solvent naphtha is in fair demand at 1s. 5½d. to 1s. 6d. per gallon. Naphthalenes are in limited inquiry at about £12 10s. per ton for refined quality and from £4 for crude.

German Methanol in America

Description of the Process

In a report to the Chemical Division of the U.S. Department of Commerce, Trade Commissioner Daugherty, of Berlin, says that the Badische Anilin und Soda Co. owns and operates both the Haber-Bosch process of nitrogen fixation and the new synthetic methanol process. German official foreign trade figures for the first five months of 1925 show exports of pure methanol amounting to 3,410 metric tons, of which 578 tons went to the United States, 746 tons to Great Britain, 490 tons to Russia, and 469 tons to Switzerland.

The technology of the German process is analogous to that of production of ammonia by the Haber-Bosch process. Carbon monoxide gas and hydrogen are combined under pressure of 200 atmospheres and at a temperature around 400° C. in the presence of a catalyst, probably finely divided pure zinc oxide. In the same manner, ammonia is synthesised by the Haber-Bosch process at a pressure of 200 atmospheres and a temperature of round 600° in the presence of a catalyst (iron oxide activated with calcium oxide). The chemical engineering involved in both processes is the important factor.

Increasing Output

Production of synthetic methanol at the Leunawerke is increasing. It is reported, without confirmation, that present production amounts to 1,000 metric tons monthly and that it will be doubled shortly. The dye cartel will probably consume 5,000 to 10,000 tons in connection with its operations.

Another synthetic process which has aroused interest in certain quarters of the American chemical industry is a German process for the production of butyl alcohol. As far as can be learned, this is based upon the reduction of aldehydes to alcohols by the use of a suitable catalyst. The chemists Stwimmig and Ulrich apply this process also to the aliphatic oxy-aldehydes and unsaturated aldehydes.

Production in the U.S.

The Mathieson Alkali Works has been licensed by the Chemical Foundation, with other American chemical manufacturers, to manufacture synthetic methanol, and is well equipped to undertake the manufacture of methanol in its Niagara Falls plant, since it is at present manufacturing synthetic ammonia there and the apparatus for both processes is similar. Methanol production will not be started for about six months.

British Cement Claims

The British Portland Cement Association, in a statement made recently, contended that employment, in both coal and cement industries in Britain, was being curtailed by the importation of bricks and cement from foreign countries. Recent Board of Trade figures showed that during the first eight months of this year 102,234,000 foreign bricks and 138,227 tons of foreign cement, of the aggregate value of £636,388, were imported. "These two items," said the statement, "represented a loss of about 190,000 tons to British cement production. Concrete bricks—strong, durable and waterproof—can now be made in any shade of colour.

Statistics recently published by the Cement Marketing Company show that a ton of coal is required for the manufacture of two tons of cement; and, on the basis of the loss of 190,000 tons production to the cement industry, the British mining industry has lost orders for about 95,000 tons of coal.

Working Aluminium

A booklet dealing with the practical use of aluminium has been issued by the British Aluminium Co., Ltd., 109, Queen Victoria Street, London, E.C.4. It gives detailed instructions on such questions as bending, safe working pressures, welding, flux, and physical properties, and concludes with comprehensive tables of sizes and weights of aluminium tubes, and safe pressures.

Hexyl-Resorcinol

We understand that the manufacture of hexyl-resorcinol, respecting which we have had some recent inquiries, is the subject of a patent held by Sharp and Dohme, Inc., of Baltimore, U.S.A., and that the British Drug Houses, Ltd., London, are the sole licensees in this and many other countries. It is already available for use, under the trade name of "Caprokol" (Hexyl-Resorcinol B.D.H.).

Company News

BABCOCK AND WILCOX, LTD.—An interim dividend of 5 per cent., free of tax, has been declared.

BROKEN HILL PROPRIETARY CO.—A half-yearly dividend of 1s. per share is payable on November 11.

B. LAPORTE, LTD.—A recent issue of ordinary and preference shares by this company, we are informed, have been heavily over-subscribed.

SADLER AND CO.—The directors have declared a dividend of 4 per cent. per annum, less tax, on the ordinary shares.

ROSARIO NITRATE CO.—The directors have declared an interim dividend of 5 per cent., less tax, on account of the current year.

INTERNATIONAL NICKEL CO.—A quarterly dividend of 1½ per cent. on the preferred stock has been declared, payable on November 2.

RECKETT AND SONS.—An interim dividend of 9d. per share, less tax, is announced on the ordinary shares for the quarter ended September 30.

CANADIAN EXPLOSIVES.—For the quarter ended September 30, a dividend of 1¾ per cent. has been declared on the 7 per cent. cumulative preferred shares, payable on October 15.

RIO TINTO CO.—An interim dividend of 15s. per share on the ordinary shares, less tax, is announced, payable on November 2. For the corresponding period last year only 10s. per share was paid.

UNITED ULTRAMARINE FACTORIES CO.—A net profit of 517,010 marks is reported for the year ended June 30. A dividend of 8 per cent. on the ordinary and 6 per cent. on the preference shares will be paid, and 31,559 marks carried forward.

BRITISH CELANESE, LTD.—Arrangements have been made, it is understood, for the placing privately of £300,000 7 per cent. first mortgage debentures. The stock is being taken at 95½, and it represents the unissued balance of the authorised total of £1,000,000.

ANGLO-CHILEAN CONSOLIDATED NITRATE CO.—A New York syndicate announces that it has purchased for $16,500,000 the 7 per cent. debenture 20-year sinking fund bonds with some stock of this nitrate company, increasing American participation to about 13 per cent.

HEPPELLS, LTD.—Presiding at the annual meeting on Monday, Sir Alan Hutchings announced that the board had decided to offer forthwith to all shareholders in proportion to their respective holdings the unissued ordinary shares of £1 each at par, a total of 30,940 shares.

EASTERN CHEMICAL CO.—After writing off cost of renewals and repairs, the accounts for the year ended March 31 last show a loss of £5,303, making a deficit of £13,127 on the profit and loss account. For the previous year a loss of £5,856 was reported, the last dividend paid being 10 per cent. in respect of 1920-21.

JOHN BELL AND CROYDEN.—The report for the year ended January 31 last, states that after writing down stocks, making due allowance for bad and doubtful debts, depreciation of plant and machinery, fixtures and fittings, amortisation of leases, payment of debenture interest and interest and expenses on loans, there is a loss for the period amounting to £25,040, compared with £31,788 for six months to January 31, 1924. In December last the directors asked the shareholders to take up an issue of £50,000 7 per cent. income bonds. The response was so small that subscriptions were returned. Following this, the finance company associated with certain of the directors in guaranteed overdraft of £30,000, withdrew their support, and requested repayment of their proportion of amount advanced. The directors subsequently endeavoured to place £50,000 7 per cent. five-year notes, and up to the present approximately £20,000 of these notes have been issued. They expect to be able to place the balance of £30,000.

Chemical Engineers' Reception

THERE was a very large attendance on Wednesday evening at the Science Museum, South Kensington, at the annual reception given by Sir Frederic Nathan (president) and the council of the Institution of Chemical Engineers. The guests, who were received by the President, spent a pleasant evening together in inspecting the exhibits in the museum.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to November 14, 1925.

"SPIDRICIDE."

461,538. For chemical substances used for agricultural, horticultural, veterinary and sanitary purposes. Class 2. The Graesser-Monsanto Chemical Works, Ltd., Oil Works Road, Cefn, Ruabon, North Wales; and 39, Billiter Buildings, Billiter Street, London, E.C.3; chemical manufacturers. August 19, 1925.

"RHODAMINTH."

460,605. For chemical substances prepared for use in medicine and pharmacy. Class 3. Rhenania Verein Chemischer Fabriken Actien-Gesellschaft (a joint stock company organised under the laws of Germany), 33, Kaiser Wilhelm Ring, Cologne, Germany; manufacturers of pharmaceutical preparations and other chemical products. July 14, 1925. (To be Associated. Sect. 24.)

Tariff Changes

AUSTRALIA.—A dumping duty has been placed on mineral lubricating oil from U.S.A.

FRANCE.—Full details of the new regulations concerning trade in fertilisers in France may be seen at the D.O.T.

PALESTINE.—Crude petroleum and anthracite may now be exported duty free.

ITALY.—Glucose and white vaseline oil for rice processes may be imported free. Residues from mineral oil distillation for use in road making are now imported duty free.

SERB CROAT-SLOVENE STATE.—New reduced duties for U.K. goods include (all per 100 kilogs and in gold dinars):—Chrome alum, crystallised, free; peroxide of hydrogen, 4; silicates of soda and potash (waterglass) solid, 4; liquid, 2; liquid carbonic acid, 10; cuprous chloride paste, 12; chemical and pharmaceutical products, 300; white, yellow and red lead, 30; bronze colours, 45; chrome colours, 25; pigment and lake colours, etc., 25; oil varnishes, 50; lac varnishes, 80; oil cement and resin cement, 12; other cement, 35.

SYRIA.—The import of nitrate of soda of 60 per cent. or more purity is prohibited.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

PRESS CLOTH FOR FILTERS.—For the supply of 30 rolls of 38 in. jute press cloth and 10 rolls of 42 in. jute press cloth, 17 oz. to the yard, to sewage farm, for Walthamstow Council. Tenders to Mr. C. S. Watson, clerk, Town Hall, Walthamstow, E.17, by post only, by October 28.

CHEMICALS.—Manufacturers' agents in Sydney wish to represent for whole of Australia British manufacturers of chemicals. (Reference No. 400.)

INSULATING VARNISHES.—A manufacturers' agent in Montreal wishes to represent British manufacturers of insulating varnishes and enamels. (Reference No. 405.)

SHELLAC.—Agents in Poland wish to represent British manufacturers of shellac. (Reference No. 429.)

GAS PURIFYING PLANT.—Tenders are invited for the supply and delivery of purifying plant for the Dunedin, N.Z., City Gas Works, and will be received by the Town Clerk, Town Hall, Dunedin, by November 14. A copy of the plans, specifications, and general conditions may be seen at the D.O.T. (Enquiry Room). (Reference No. A.X. 2453.)

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

NICHOLS CHEMICAL CO., LTD., Baxenden. (M., 17/10/25.) Registered October 2, £1,000 (not ex.) debentures, to G. W. Nichols and his wife, The Gables, Headroomgate Road, St. Annes-on-the-Sea; general charge (subject to charges on the Chemical Works, Lower Booths, Accrington). *Nil. July 8, 1924.

WALKER (J. B.) AND CO., Ltd., Hull, oil refiners. (M., 17/10/25.) Registered October 1, £2,500 debentures, balance of £8,000; general charge. *£12,610. July 11, 1924.

Satisfaction

HAIGH DYEING CO. (1920), LTD., Wigan. (M.S., 17/10/25.) Satisfaction registered October 6. £5,000. Registered July 3, 1925.

London Gazette, &c.

Companies Winding Up

BRITISH POTASH CO., LTD. Last day for receiving proofs for intended dividend, October 24. Liquidator, H. E. Burgess, senior official receiver and liquidator, 33, Carey Street, Lincoln's Inn, London, W.C.2.

HADFIELD'S CHEMICAL WORKS, LTD. (C.W.U., 17/10/25.) Compulsory winding-up order made October 13.

Companies Winding Up Voluntarily

OUTWOOD BLEACHWORKS, LTD. (C.W.U.V., 17/10/25.) By special resolution, September 14, confirmed September 30. F. Youatt, Manchester, chartered accountant, appointed liquidator.

TENTERHOUSE BLEACHING AND DYEING CO., LTD. (C.W.U.V., 17/10/25.) By special resolution, September 14, confirmed September 30. F. Youatt, Manchester, chartered accountant, appointed liquidator. Meeting of creditors at 7, Norfolk Street, Manchester, on Saturday, October 17, at 10. (All creditors have been, or will be, paid in full.)

WASTE BLEACHERS, LTD. (C.W.U.V., 17/10/25.) By special resolution, September 14, confirmed September 30. F. Youatt, Manchester, chartered accountant, appointed liquidator.

Notice of Intended Dividend

MANGOLD, Louis Augustus, and MANGOLD, Charles Bernard, trading as MANGOLD BROS., 17, Harp Lane, London, E.C., chemical merchants. Last day for receiving proofs, October 23. Trustee, E. H. Hawkins, 4, Charterhouse Square, London, E.C.1, incorporated accountant.

New Companies Registered

KNOCKALVA PLANTING SYNDICATE, LTD. To acquire and deal with concessions, grants, etc., or estates upon which camphor and other like substances are grown. Nominal capital, £20,000 in £1 shares. Solicitors: J. J. Edwards and Co., 28, Sackville Street, London, W.1.

L. F. AND S. POWLING, LTD. Bone cutters, manure and fertiliser manufacturers and dealers, hide dealers, etc. Nominal capital, £6,000 in £1 shares. Solicitors: Pye-Smith and Hulbert, 14, Rolleston Street, Salisbury.

TIDE PETROLEUM CO., LTD., 48-52, Bridgwater Street, Liverpool. Manufacturers of and distillers of tar and petroleum products; oil blenders and grease manufacturers, etc. Nominal capital, £1,000 in £1 shares.

WELBECK DISTILLATION CO., LTD., New Hucknall Colliery, Mansfield, Notts. Manufacturers of, agents for and dealers in products arising from the distillation of carbonaceous materials; dealers in and refiners of tar, slag, mineral ores, etc. Nominal capital, £50,000 in £1 shares.

Lime for the Land

WARNINGS of the serious effect on British agriculture of neglecting to lime the land have already been given by the Ministry of Agriculture, and in order to draw the attention of farmers to this important duty the Cement Marketing Co. has issued a booklet on the subject. Lime forms an essential plant food, and unless it is present in fair quantities the soil cannot produce good crops. Yet, it is pointed out, most of the agricultural land throughout the country is in urgent need of lime to bring it up to its highest productive capacity.

In detailing the actual functions of this mineral dressing, the booklet mentions the improvement brought about by its presence on both clay and light soils, and the beneficial effect on those bacteria which convert the organic matter in the soil into plant food. Besides being an insecticide, it helps to destroy sorrel, spurrey, and similar weeds. Lime should be applied to grass land in autumn or winter, and, in the case of arable land, in autumn or spring, some two to four weeks before the particular crop is sown. Both soil and lime should at the time be in as dry a condition as possible.

According to a statement published some time ago by the Ministry of Agriculture (Leaflet No. 170), the practice of liming the soil has been so much neglected by British farmers during the past 50 years that much of the land is making very uneconomical use of the labour and manures put into it. "In various parts of the country," it states, "there is evidence, on almost every type of soil, that a return to the practice of liming is essential if the fertility of the soil is to be maintained."

New Dye for Celanese

A NEW dye manufactured specially for use in the dyeing of blacks on materials containing Celanese has been placed on the American market by E. I. du Pont de Nemours and Co. Previously difficulty has been experienced in obtaining a black that will leave Celanese unstained and the new product known as Pontamine Fast Black CW will not offer this disadvantage. Pontamine Fast Black CW has good fastness in general for a direct colour and is especially satisfactory for clothing. It can be after-treated with formaldehyde to improve fastness to washing but it reddens the shade somewhat. It is stated to be very soluble, and as copper and iron have very little effect on the shade it can be used in all metal dyeing machines. It dyes best with the addition of 20 per cent. Glauber's salt at a temperature of 160° F., and this method is generally employed to obtain the most satisfactory results when it is desired to leave Celanese unstained.

Chemical Tenders Accepted

CHEMICAL tenders recently accepted include:—Carbonising plant, Drake's, Ltd., £32,675; sewage filters, M. Williams and Co., £8,125 (recommended), both for Cheltenham Council. For the London County Council:—Chemical and physical apparatus, Brown and Son (Alembic Works), Ltd., A. C. Cossor and Son, Duroglass, Ltd., J. J. Griffin and Sons, Ltd., J. Lang and Son, W. H. McCarthy and Sons, J. Orme and Co., Ltd., T. P. Parkes and Co., Ltd., Pastorelli and Rapkin, Ltd., Scientific Glassblowing Co., Scientific Supplies Co., Ltd., W. Toogood, Ltd., and Townson and Mercer, Ltd. Toilet soap, £44 per ton, B. H. Baker and Co., for Liverpool Corporation. Dust intercepting plant for vertical retorts at Provan Gasworks, Davidson and Co., Ltd., Glasgow, £911. Tar still at Dalmarnock Chemical Works, for Glasgow Corporation, Galloways, Ltd., Manchester, £270. Pitch (50 tons), Smart's Tar Distillery, E., £118 5s., for Stepney Borough Council.

Flour from Soya Beans

REPORTS state that a Russian at Harbin, North China, has succeeded in grinding soya beans and extracting the oil so that the flour is not distasteful and cannot, it is said, be distinguished from wheat flour. The flour costs about one-third the price of wheat. The soya bean is used extensively in the soap and paint industries, and it yields oil of various grades. It is a product of North China, and vast areas are capable of being cultivated.